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Remarks
ON THE
PATHOLOGY OF WAR NEUROSES.

An Address given to the Officers at the Lord Derby War Hospital, Warrington,

BY JUDSON S. BURY M.D. LOND., F.R.C.P. LOND.,
MAJOR, R.A.M.C.(T.); CONSULTING PHYSICIAN TO THE MANCHESTER ROYAL INFIRMARY.

GENTLEMEN,—I appreciate very highly your kindness in asking me through Lieutenant N. Morris to give an address at one of your medical meetings, and let me take this opportunity to express to you my indebtedness for the hospitality and kindly welcome you have always given me on my Saturday visits. The choice of a suitable subject has been difficult because I wished to select one which would be of interest to representatives of each of the three great departments into which this large hospital is divided—viz., mental, medical, and surgical. It occurred to me that many of the so-called functional neuroses and also the reflex nervous disorders caused by injury have been observed by all of us, and that therefore it might be of interest to review our knowledge regarding at least some of them. These disorders, which have been very prevalent during the present war, were previously well known to us in civil practice; the difference is one of frequency rather than of kind.

The symptoms of the neuroses are: mental confusion, stupor, headache, irritability, loss of memory, insomnia, nightmares, hallucinations, obsessions, disorders of the special senses, disorders of speech, disorders of motor functions (such as tremors, convulsions, contractures, and paralysis), and disorders of sensation.

"FUNCTIONAL" AND "ORGANIC" NERVOUS DISORDERS.

At the outset let me say a word as to the difficulty of giving any precise definition of the terms "functional" and "organic."[1] These are commonly used in a pathological sense, being understood to imply the presence or the absence of some definite visible changes in nerve-tissue. But visibility is a relative term, it depends on our eyesight and the powers of our microscopes, and to some extent on staining reagents. Our methods of investigating nerve tissue are not infallible, and we must admit the possibility that even an emotion such as fear may produce minute changes in some of the cortical neurons.

If on grounds of convenience the terms "functional" and "organic" are retained, two points should be clearly recognised—(1) the term "functional" ought to mean not the absence of morbid changes but only the absence of detectable changes; and (2) it ought not to be taken for granted that a disorder which has no known structural changes will run a more favourable course than one in which such changes are apparent. The lesions underlying paralysis agitans, epilepsy, and dementia præcox are unknown to us, yet we can scarcely regard these diseases as curable. Death may result from a profound chemical disturbance of the atoms and molecules of nerve tissue which leaves no visible trace, and between such changes and those which are conspicuous there must be every gradation both in size and nature.

Such gradations are well illustrated by the results of a study of "war neuroses." These neuroses may be produced in at least three ways: (1) by the breathing of poisonous gases, especially carbon monoxide; (2) by concussion of the central nervous system the result of aerial compression caused by the explosion of a shell; and (3) by emotional disturbance. Frequently the neurosis is the result of a combination of these agents.

POISONOUS GASES.

First, with regard to carbon monoxide, Colonel F. W. Mott[2] has pointed out that if a man is buried under sandbags in a heavily shelled trench or dug-out, or if for any other reason he is confined in a small space in which the gas produced by an explosion collects, he will be rendered unconscious if he is not already unconscious as a result of concussion. In two fatal cases Mott found miliary punctiform hæmorrhages in the white matter of the brain, the result of inflammatory stasis and thrombosis of small arteries. If consciousness is regained the man appears dazed and stupid and may suffer for a long time from headache, loss of memory, mental confusion, disturbances of speech, and tremors.

CONCUSSION OF THE BRAIN OR COMMOTIO CEREBRI.

Apart from injuries received from fragments of a shell or from impact of the body against the ground or other solid substance, mere proximity to an exploding shell may be sufficient to cause detectable changes in the central nervous system.

In some cases the changes are severe enough to cause instantaneous death, probably owing to sudden arrest of the vital centres in the medulla from the enormous aerial compression; the force generated by 17-inch shells has been estimated as equal to 10 tons to the square yard. In other cases the changes are less severe and the man survives, but is subject to various symptoms indicating disorder of the nervous system. In many cases of shell shock the cerebrospinal fluid withdrawn by lumbar puncture shortly after the shell explosion has shown increased pressure and has been found to contain evidence of the presence of blood, indicating that hæmorrhage had occurred.

Recently Mott[3] has published a report of the examination of the brains in two cases of death from commotio cerebri without visible external injury and without the punctate hæmorrhages indicative of gas poisoning. His description serves to explain sudden death in shell shock as well as the clinical symptoms which persist for some time in non-fatal cases.

One of his cases was that of a captain who for six months prior to his fatal attack had suffered from much nervousness, which, however, he had kept under control. Later he was in an area which was subjected to an intense bombardment during which no gas shells were used; this lasted about four hours. On the following day six shells came over. He was not buried or gassed. One shell burst about two feet behind him. His symptoms were coarse tremors of the limbs, inability to walk or to do anything, together with crying and other hysterical manifestations. On the evening of the same day he was admitted to the field ambulance in a state of acute mania. He was quieted with morphine and chloroform and slept all night. The next morning he woke up apparently well and suddenly died.

The brain was extremely congested and there were a number of minute punctiform hæmorrhages at the terminations of the smallest vessels on the surface of the brain, but there were no intracerebral hæmorrhages. The cerebro-spinal fluid was blood-tinged. On microscopical examination minute scattered subpial hæmorrhages were found almost everywhere. In the white matter of the corpus callosum, the internal capsule, the pons, and medulla there were congested vessels and hæmorrhage into their sheaths with occasionally extravasations of blood corpuscles into the adjacent tissue. The cells of the central nervous system showed early chromatolytic changes.

From a study of these changes Mott assumes that the cells of this man were in a state of commencing nerve exhaustion; some nuclei of the cells were more markedly affected than others—for example, the cells of the vago-accessorius nucleus. Mott correlates the maniacal excitement during life with the marked venous congestion of the cortex and the subpial hæmorrhages; the sudden death with the changes in the vago-accessorius nucleus, and the congested state of the medulla with hæmorrhage into the sheath of a vessel in the median raphe of the medulla. He thinks that the cerebral anæmia which was present and the chromatolytic changes in the nerve cells may explain many of the symptoms of sufferers with true shell shock—namely, headache, giddiness, insomnia, stupor, mental confusion, and terrifying dreams—symptoms which are so common in recent cases.

The group of symptoms is similar to that which we have all observed in civil practice from concussion of the brain as a result of blows or falls on the head. In both cases there is a contused condition of the cerebral cortex. In many respects the symptoms resemble those of severe non-traumatic neurasthenia.[4] But I think that certain differences may be observed. Instead of an uncontrollable tendency to discuss their symptoms in detail, sufferers from a bruised brain are dull and apathetic and show a tendency to drowsiness and stupor rather than to insomnia. The neurasthenic is able to commence work and to do it accurately for a time, but he soon tires, he lacks concentration, and exhibits indecision in all his actions. But the patient with a bruised brain is unfit to follow any employment; he is too apathetic, as a rule, to show signs of worry or anxiety, and when his cortical lesion is severe and extensive apathy may be associated with profound loss of memory and other signs of mental deterioration.

EMOTIONAL DISTURBANCE.

Thirdly, as to the effects of emotional disturbance apart from those of concussion or of the inhalation of poisonous gases. It is difficult for those of us who live quietly at home to visualise fully the terrifying conditions under which our comrades live at the front. When we think of the physical and mental strain of life in the trenches, of the shocks to the nervous system from the detonation of high explosives, together with the terror caused by the horrible sights of death and mutilation around, we are not surprised to find that the strongest nervous system may be exhausted or even shattered. How much greater and more frequent must be the effects of such terrifying surroundings on soldiers whose nervous systems, in consequence either of some previous illness or injury, or of an inborn neuropathic or psychopathic taint, offer less than normal resistance to emotional stress. As Hubert Norman [5] remarks: "The exciting factor is important, but still more important is the condition of the organism upon which it acts."

In this class of neuroses and psychoses the most careful examination of the patient, both soon after his breakdown and later at a base hospital, reveals no evidence of organic disease of the nervous system. It is, however, scarcely conceivable that great emotions should not produce some bodily change; recent experimental work, indeed, shows that definite changes do occur.

Effect on Sympathetic Nervous System.

The surface manifestations of pain and of great emotions, such as fear and horror, are well known to us. For example, "the contraction of blood vessels with resulting pallor, the pouring out of 'cold sweat,' the arrest of saliva so that the tongue cleaves to the roof of the mouth, the dilation of the pupils, the rising of the hairs, the rapid beating of the heart, the hurried respiration, and the trembling and twitching of the muscles, especially those about the lips."

But, as shown by the researches of Walter Cannon [6] and others, states of intense feeling are attended by disturbances not only in the superficial structures but also in deep-lying organs. These disturbances are similar to those brought about by great muscular exertion, and depend on nervous impulses to the sympathetic nervous system. Some of these impulses passing along the splanchnic nerves to the suprarenal glands lead to a pouring out of adrenalin into the circulating blood, which powerfully reinforces the action of the sympathetic nerves.

The result is that the vessels to the abdominal viscera are constricted, the blood pressure is raised, and the blood is driven from the abdominal viscera to the heart, lungs, brain, and skeletal muscles. Another effect of adrenalin is to transform the glycogen in the liver into sugar, which circulating in the blood gives renewed strength to the muscles. Moreover, adrenalin brings about a rapid recovery of muscle after its irritability has been lowered by fatigue, and it tends to neutralise or destroy the toxic substances produced by muscular or nervous work. During strenuous muscular action, especially if associated with emotional excitement, the respirations become rapid and forced in order to draw in more oxygen and to get rid of the excess of carbon dioxide. This ventilation of the lungs is much aided by the action of adrenalin in relaxing the smooth muscles of the smaller bronchial tubes.

In these various ways, then, muscular action is rendered more efficient by the changes in the viscera brought about by emotion. The shifting of blood from the abdominal organs to the organs immediately essential to muscular exertion—namely, the lungs, heart, and central nervous system—the increased vigour of the heart, the quick abolition of the effects of muscular fatigue, the mobilising of energy-giving sugar in the circulation, all help to render the organism more effective in the violent display of energy which fear or rage or pain may involve. Reservoirs of power are called forth which enable a man to perform feats of strength and endurance far beyond his normal capacity.

If the various energising substances—adrenalin, sugar, and probably also thyroid secretion—the products either of fear or of the fury and excitement of battle, are not worked off by muscular action it is conceivable that their presence in excess in the blood may lead to pathological effects; in other words, the cessation of physical exertion while strong emotions are dominant may be followed by a disordered action of both mind and body, which later, as when the soldier reaches a base hospital, is expressed by tremors, by tachycardia, by starting at the slightest noise, and by terrifying dreams of the horrors he has witnessed.

In severe cases the continued over-action of the suprarenal, and probably also of the thyroid glands, may produce a clinical picture similar to that of Graves' disease. Sometimes sugar is present in the urine. There is, indeed, clinical evidence that occasionally glycosuria and even diabetes may be originated by emotional disturbance. Schultze believes that the amount of glycosuria depends on the degree of mental depression, and that the greatest excretion of sugar occurs in the fear-psychoses.

Psychic Effect.

Now, the effects of emotional shock can scarcely be limited to the changes which, as we have seen, appear to be due to stimulation of the sympathetic nervous system. Surely, they must also produce some change in the neurons of the central nervous system. The exact nature of such change is unknown to us, and is not likely to be revealed by a microscopical examination of dead neuronic tissue. It is only by researches on the living neuron that we can expect to obtain any satisfactory knowledge.

Crile [7] has demonstrated by laboratory experiments that "in an animal driven strongly by emotion" there is a "mobilisation of the energy-giving compound in the brain cells, evidenced by a primary increase of the Nissl substance and a later disappearance of this substance and the deterioration of the cells." He says that the cell-changes due to the emotions are "so similar, and in extreme conditions approach so closely to the changes produced by disease, that it is impossible to say where the normal ceases and the abnormal begins." We have also to consider the association and dissociation of neurons which may occur, and which may be due to attraction and retraction of their dendrons. How, then, can we divide cases clinically into functional and organic?

In a consideration of the various agents that may originate and maintain a neurosis one factor—namely, repression—must not be overlooked. Fear must affect every soldier at some time or other during his life at the front. With many men, especially those who are highly strung, the fear of being afraid is always before them—the fear that they may fail at the critical moment to do what is required of them. (An interesting case is related by Professor G. Elliot Smith [8]) The almost incessant efforts to repress such fear must have an injurious effect on the mental and bodily functions and tend to prepare the way for a nervous breakdown.

The result of repression of the emotions is often seen in men under treatment in home hospitals. The voluntary process of an attempt to remove painful memories and thoughts out of the field of attention, instead of being beneficial, may take an active part in accentuating the mental distress, in maintaining the neurosis, and also in the development of new symptoms. In some patients there is an attempt to banish from the mind feelings of shame due to their having broken down; in others grave apprehensions about fitness for further service, which are repressed owing to the idea that such thoughts are equivalent to cowardice, or might be so interpreted by others.

Rivers [9] points out that the advice usually given to such patients is that they should try to banish all thoughts of war from their minds, and they are instructed to try to think of other things such as beautiful scenery and other pleasant aspects of existence. Now, although there is much soundness in this policy, and although no one would advise the patient to concentrate his thoughts on painful memories or brood upon feelings of regret and shame, much harm may be done by an attempt to banish them wholly from the mind. If in place of thrusting aside such distressing thoughts the patient faces them boldly and talks openly with his doctor about them his general health is much more likely to improve, his power of sleeping to be increased, and his sleep to be less disturbed by terrifying dreams of warfare.

But for further discussion of this important subject and for records of suggestive cases I must refer you to Rivers' very interesting and valuable paper.

HYSTERIA.

Hitherto we have been mainly dealing with what I may call the pathogenesis of war neuroses. Now we may ask regarding the symptoms which we observe, Can they all be adequately explained by such bodily changes as I have mentioned; or have we to introduce other factors, especially

that subtle psychical condition which we call Hysteria? The subject of hysteria is very complex, and there are many views regarding the nature of this disorder. One of the most important is that of Babinski, who regards hysteria as essentially a matter of suggestion. He defines it as a pathological state manifested by symptoms which it is possible to reproduce exactly by suggestion in certain subjects, and which can be made to disappear by the influence of persuasion or counter-suggestion alone.

All the facts bearing on the development of hysteria have been admirably discussed by Babinski and Froment.[10] They review their own observations during peace and war, as well as the accounts given by trained observers who were present at times of great emotional stress, such as earthquakes, railway accidents, shipwrecks, and heavy bombardments at the front. They conclude—

"That emotion alone, however intense it may be, does not produce hysterical disorders, and although emotions may prepare the mind to submit to suggestion, they nevertheless exclude suggestion for the time being, and when they are intense they prevent the development of hysterical disorders or even cause them to disappear. When the human soul is shaken by a profound emotion there is no room left in it for hysteria."

One account which they quote is by Clunet, who was travelling on the transport *La Provence* at the time when she was torpedoed:—

Clunet saw no hysterical symptoms during the 17 minutes which elapsed before the boat sank, nor during the 18 hours he spent on a raft. There were manifestations of extreme emotion in the boat and of physical suffering on the raft, but it was not until they were picked up by a destroyer that some of the men showed paralysis, mutism, and other hysterical symptoms, all of which Clunet cured within a few hours by vigorous counter-suggestion, with such success that no relapse occurred during the eight following days whilst they remained under observation.

Similarly, real hysterical manifestations are rarely met with at the front. Emotional symptoms are common enough, men reaching the aid-posts weeping and tremulous, with rapid pulse and respiration. It is only at the base and in home hospitals that hysterical symptoms are common, the reason being that there has been time for suggestions to enter the mind during its recovery from a state of confusion. The particular symptoms that develop—whether paralysis, anæsthesia, mutism, or deafness—depend on the mental impressions received by the patient in consequence either of some morbid sensation of his own or of some circumstance attending the method of examination by his doctor.

The old conception of hysteria as held by Charcot and his contemporaries was very wide, and included a large number of disorders which are now known to have a different pathology. Babinski has done good service by trying to narrow this conception, and without attempting to discuss his theory of suggestion it will be useful to consider whether certain manifestations of these war neuroses which are still often regarded as hysterical may not be explained by physical rather than by psychical agency.

Reflex Nervous Disorders.

I will limit my remarks to certain contractures and paralyses which develop after injury and which in their character, distribution, and associations present a close resemblance to the condition known as arthritic muscular atrophy. The fact that inflammation of a joint is almost invariably attended by rapid wasting of the muscles that cover the joint was first described by John Hunter. He recognised also that the atrophy is not the result of default of movement, for he says when the other limb is examined it is seen that the muscles there have preserved their volume, although they have not been more moved than the muscles of the diseased limb. He also noted that the muscles were sometimes paralysed, even when they were not atrophied.

Ollivier in 1869 was the first, I believe, to suggest the reflex nature of the phenomenon. Subsequently many theses and articles were published, including one by Charcot, who describes the condition with his usual lucidity and dramatic force. About 30 years ago I was much interested in this subject and in a published paper reviewed our knowledge concerning it.[11] Let me give a simple example.

A man injures his knee; it becomes painful and swollen; in a short time the muscles of the affected limb become weak and wasted, but both weakness and wasting are most marked in the quadriceps extensor. A measurement taken a week after the injury may show a difference of an inch between the girths of the thighs. The knee-jerk is exaggerated, and sometimes also on the unaffected side.

Other examples are: the wasting of the interossei and the muscles of the forearms in rheumatoid arthritis of the hands, of the deltoid in injuries of the shoulders, of the glutei in hip disease, and so on.

In explanation of these symptoms no better hypothesis than that of Charcot has yet been advanced—namely, that the nutrition of the motor cells in the spinal cord is damaged in a reflex manner, morbid influences being conveyed to them by the joint-nerves, and that their derangement or torpor determines the changes in the muscles. That the process is reflex was indeed shown by Raymond, who found that a previous division of the posterior spinal roots prevented the wasting of the muscles. In some cases the atrophy is persistent, and may spread to other muscles of the limb. I have seen cases which suggest that occasionally progressive muscular atrophy may be initiated in this way.

Now, curiously enough, these reflex nervous disorders, which may follow not only joint affections but also slight wounds to a limb or its injury by frostbite or in other ways, have been overlooked or discredited, and in many modern text-books on medicine there is little or no reference to them. The discredit into which the old views had fallen is largely due to the exaggerated development of the idea of hystero-traumatism—that is, to attribute to hysteria almost all the nervous disorders following traumatism and not due to a definite lesion of the nervous system. In their book Babinski and Froment have published important observations on these reflex neuroses and have given a full description of the atrophic paralysis and spasms which occur, and also of the other symptoms that may be associated with them—namely, increased excitability and slow contraction of muscles on mechanical stimulation, disturbances of sensation, of temperature, and of vaso-motor control as shown by coldness and cyanosis of the affected part, and, lastly, trophic changes in the bones and skin.

Several instances of these reflex disorders have come under my care during the present war. In Babinski and Froment's book will be found a number of completely new observations, as well as a discussion of the diagnosis of these disorders from other paralyses and contractures, whether they be of hysterical or of organic origin.

Conclusion.

In conclusion, I would emphasise the importance of recognising the gradual transitions that occur, both as regards symptoms and pathology, between emotional disorders and serious disease of the central nervous system. Think only of a convulsive seizure. Can the most experienced neurologist who watches it closely always tell whether it is due to malingering, to hysteria, or to epilepsy?

I would also draw attention to the similarity in symptoms that may be sometimes observed in functional and organic diseases. Cases of concussion of the central nervous system from shell explosion have been described which presented the symptoms of disseminated sclerosis, of cerebellar disease, or of general paralysis of the insane. Major Eager of this hospital, who has had such a large experience of mental disease, has told me that he is much impressed with the striking resemblance between the symptoms of some cases of shell shock and those of general paralysis. This suggests that similar groups of cortical cells are deranged in the two diseases; in the one by a specific poison which ultimately will lead to their complete destruction, in the other by the results of concussion or of profound emotional disturbance the effects of which may be expected entirely to pass away.

Lastly, we must remember the frequency with which hysterical manifestations may be grafted on to a basis of organic disease, and therefore the importance of making a thorough examination of every case which appears to be hysterical, in order that no sign of structural change may escape our notice.

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GUNSHOT WOUNDS OF THE PERIPHERAL NERVES.

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BETWEEN June, 1915, and March, 1918, 364 cases of injuries of the peripheral nerves have been admitted to the surgical division of the Norfolk War Hospital. 250 cases have come under my observation, and of these 102 cases have required operative treatment.

Pre-operative and Post-operative Treatment.

The operative treatment in these cases should be looked upon merely as an incident in the treatment of the case. The most skilfully performed operation on an injured nerve is doomed to failure, and can accomplish little if the pre-operative and post-operative treatment is insufficient or neglected. The treatment in these cases should extend over a period of many months. The results can only be good when treatment is commenced early, and is conducted with great perseverance both on the part of the patient and on the part of those who are responsible for his treatment. It is often difficult or impossible in these cases to prevent complications and trophic lesions making their appearance, but if no attempt be made to prevent and overcome these conditions irreparable damage will supervene, damage which no amount of surgery can be expected to correct. It is most essential to try to make the patient realise the importance of treatment, and to make him understand how much he can do for himself to promote his recovery.

The treatment can be considered under the following headings:—

1. Postural treatment.
2. Electro-therapeutic treatment, including electric treatment, massage, and exercises.

Much has been written with regard to the positions which should be maintained after a patient has suffered a lesion of a peripheral nerve, but it must not be considered that everything has been done when the patient's hand or leg has been fixed in the orthodox position by some splint. It often happens that these cases are complicated by some injury to the bones of the limb. A splint is applied, fixing the whole limb. Of the many inventions for the treatment of fractures, and especially those complicated by nerve lesions, all are bad which hinder the easy movement of the phalanges of the thumb and fingers. If the hand or the foot is left fixed in any one position for long periods and passive movements are not frequently performed, disaster is certain to follow. It is quite as important to remove a splint often as it is to apply it at all.

The nutrition of the muscles must be preserved as much as possible by massage and electrical treatment. Vaso-motor lesions are of common occurrence in these cases, and it is often noticed that the limb affected is cold and clammy. It is most important to keep these limbs warm; especially is warmth important when electrical stimulation is being used as a method of treatment. It is futile to apply electrical stimulation to cold and blue extremities. The limb should previously be wrapped in warm cotton-wool, or immersed in hot water for a few minutes.

Joints must be prevented from getting stiff by passive movements, which should have been begun as early as possible. Cases of stiff joints will often be much benefited by hot-air baths.

The condition of the skin itself must not be neglected, but must be suitably protected from any injury. In short, every tissue innervated by the injured nerve must have due consideration and treatment. Treatment should be regular and continuous. If operative treatment becomes necessary massage should again start as soon as possible, and in the upper extremity every attempt should be made to prevent stiffness and contraction of the hand and fingers occurring.

A position of relaxation should be maintained in all nerve injuries.

In median nerve injuries the muscles supplied by the nerve are relaxed when the fingers and hand are flexed, and the thumb abducted and flexed, the arm being slightly rotated. Good results in this hospital have been obtained in cases of simple uncomplicated lesions of the median nerve without the application of splints.

In ulnar nerve injuries the muscles supplied by the nerve are relaxed, when the fingers are spread apart; the first phalanges flexed, the second and third extended, and the thumb abducted. Every attempt has been made to prevent contraction, and to maintain a position of relaxation in lesions of the ulnar nerve, by means of splints and appliances, but more success has been obtained by massage and passive movements than has been obtained by methods of fixation.

In lesions of the musculo-spiral nerve, by means of a Jones's "cock-up" splint, or some modification of it, the hand is hyper-extended, the thumb abducted, and the arm put in a position of supination, so relieving the extensor muscles of all strain. Operations on the musculo-spiral nerve are doomed to failure if the paralysed muscles are allowed to become over-stretched and lengthened by allowing the wrist to be in the flexed position of "drop" wrist. If the wrist is kept in good position injuries of the musculo-spiral nerve are among the most favourable for treatment.

It is useful before leaving the question of massage, electrical and postural treatment, to answer the question: What can these methods of treatment do for a patient who has suffered a nerve lesion, and how long should such treatment be continued? Massage, electrical, and postural treatment can prevent joints becoming stiff. It can prevent muscular contraction to some degrees, and it can maintain the tone of the muscles; in other words, it can enable the parts to be kept in the most favourable condition for the resumption of their functions.

It can do little in late and neglected cases. One often sees hopelessly contracted limbs with paralytic deformities, and with muscles the seat of degenerated changes, sent to the massage and electrical department as a last resource. These cases should have been sent to this department for the prevention of these calamities, not for their relief, for the best massage and electrical treatment is often almost a waste of time in these cases.

It is difficult to lay down any definite rules and say how long treatment should be continued. Most cases show some improvement within six months. Massage and electrical treatment should be continued for at least six months after the operation on a nerve has been performed. It is unlikely that treatment for more than a year will give rise to much improvement.

Operation.

The operative procedure may be considered under the following headings:—

1. Skin incision.
2. Isolation of nerve trunk above and below site of lesion.
3. Freeing of nerve at actual site of lesion.
4. Passing the sutures and exact co-aptation of ends of divided nerve.
5. Formation of a sheath at site of lesion.
6. Suture of deep fascia and closure of wound.

An operation having been decided upon, it should be performed under general anæsthetic. The whole arm or leg to be operated upon should have been previously prepared with the utmost care, any lesion of the skin being an absolute contra-indication to the operation. It is a great advantage to have a third assistant, whose only duty it is to control the position of the arm or leg and hold it in any desired position. This is especially advantageous when operating upon such nerves as the musculo-spiral. The operation is best performed without the application of an Esmarch bandage. Any hæmorrhage which may occur is easily controlled by the application of forceps, and the wound, when closed, is left dry, there being much less risk of the development of any hæmatoma, a very undesirable complication.

The skin incision should be of ample length; for instance, in operating on the ulnar nerve in the forearm it is best to make an incision from just below the elbow to just above the wrist; the skin having been divided its edges are protected by thin rubber sheeting or gauze attached by means of clips. If possible the skin incision should be planned so that it avoids the old scar or the scar should be excised. Excision or freeing the scar should always be practised wherever possible, the deep fascia is next divided, and any bleeding points controlled.

The nerve trunk is sought above and below the point of severance, and it is traced downwards and upwards to the lesion. In doing this the tissue surrounding the nerve should

be dissected away from the nerve, and the nerve itself should be handled as little as possible. On exposure of the injured part of the nerve a bridge of fibrous tissue is usually found joining the ends together; it is best to dissect this quite free before attempting to determine whether the nerve has been divided or not, so that when the nerve has been completely freed its continuity has not been divided during the operation. The fibrous tissue is then dissected off the nerve, and a decision arrived at as to the pathological condition present. When the conclusion is arrived at that the nerve has suffered anatomical division, and its ends are only joined by a fibrous band, one very fine silk suture is passed vertically through healthy parts of the upper and lower ends of the nerve to be joined. This suture is a great aid in maintaining the exact co-aptation of the nerve, when suturing it after removal of the intermediate fibrous tissue. Different bundles of the nerve have different functions, so it is most important to bring the corresponding bundles together in the suturing. The nerve at the site of the suture should be handled as little as possible.

After the primary suture has been inserted, the supposed fibrous band is divided, and sections are cut from its distal and proximal ends until nerve fibres are seen. The primary suture is then tied, bringing the ends of the nerve into exact apposition; a series of sutures unite the nerve-sheath. It is most important to avoid tension.

I use the finest silk and the finest needles for suturing the ends of divided nerves. Catgut is the material usually recommended. It appears to me that the exactness and security of the junction are more important than the suture material used to perform and make it.

The necessity of the formation of a sheath at the site of junction has next to be considered. The nerve after suture should be placed in a bed of healthy tissue; if this can be done it will not be necessary to surround it with any foreign tissue.

Much has been written with regard to the surrounding of sutured nerves with some material supposed to have protective virtues—a piece of fat, a piece of vein, Cargile membrane, a piece of peritoneum from a hernial sac, have all been recommended. A piece of fat of moderate thickness cut from the patient's own thigh, and loosely sutured round the nerve so as to protect the site of suture, makes an ideal covering and bed when much scar tissue is present.

If the operation is done aseptically the procedure has everything to recommend it. It is advised by many surgeons and condemned by others, but the researches of Bittorf appear to prove that it is a sound and scientific procedure. It is doubtful if the aseptic introduction of a piece of the patient's own fat can ever be harmful; it is almost certain that it is often of great service.

On completion of the suture any bleeding points are carefully tied with catgut and the wound thoroughly irrigated with warm saline solution. The deep fascia is carefully sutured with catgut and the wound closed without drainage. The arm or leg is then carefully bandaged. The limb should be placed in the best position to relieve the nerve from tension, and it should be fixed in such a position by splints and bandages. Massage for the hand should be started two or three days after the operation.

Complications.

The chief complications met with in this series of cases have been:—

1. Those due to septic infection of the wounds, extensive destruction of the soft parts, and severe injuries to the bones.

2. Extensive destruction to the nerve, resulting in a gap in its continuity, making end-to-end suture impossible.

1. Drainage and rest for the inflamed parts have been relied on chiefly to overcome the septic complications. With thorough drainage the wounds have usually healed well and given rise to little trouble. In a certain number of cases of severe infection, associated with marked swelling and œdema of the limb, it has occasionally happened that owing to the pain it has been impossible to prevent some stiffness of the fingers, due probably to the inflammation spreading to the tendon sheath. In such cases, after all the signs of inflammation have disappeared, it will be found that much benefit will be derived from gentle but firm movements of the parts under an anæsthetic.

In cases associated with compound fractures very careful treatment is necessary if necrosis with the development of a persistent sinus is to be avoided, which may delay the suture of the nerve for many months. These cases should be thoroughly drained at the earliest possible date, and all loose pieces of bone which have not firm attachment to periosteum removed. A healed wound must be obtained at the earliest possible time in cases of compound fracture, complicated by nerve lesions. Carrel-Dakin treatment or continuous irrigation should be used as a method of treatment when necessary.

2. Extensive destruction of the nerve, resulting in a gap in its continuity, making end-to-end suture impossible.

End-to-end suture is the operation of choice. It should be done whenever possible, It will usually be found possible to perform end-to-end suture after considerable pieces of nerve have been destroyed, if sufficient attention be paid to the following points:—

(1) The incision should be of ample length, so that the nerve may be separated from the surrounding structure, both above and below the lesion. (2) In lesions of the ulnar nerve it can be displaced in front of the internal condyle of the humerus. (3) During and after the operation the position of the limb should be put in that of maximum relaxation, so that all tension is taken off the nerve.

When it has been found impossible to perform end-to-end suture a variety of procedures have been attempted and advised, but it would appear that up to the present time authorities have not been able to determine the values of these operations, but from various writings it would seem that their value is not great, and that for a few successes there are many failures. Some of the procedures would, on general principles, seem quite useless. The operation for uniting the ends of nerves by cutting flaps has been condemned as useless, but I have observed this method is sometimes followed by success.

Under certain circumstances nerve suture may be replaced or supplemented by tendon transplantation—namely: (1) when nerve suture is impossible; (2) when the functional result attained by nerve suture is unsatisfactory. The most favourable cases in which to prepare tendon transplantation are those of injury to the musculo-spiral and posterior interosseous nerves. The transplantation of the tendon of the flexor carpi radialis through and into the tendons of the extensor longus pollicis, the extensor brevis pollicis, and the extensors of the fingers, is an operation followed by such good results that it should always be done in cases when it is considered likely that the musculo-spiral nerve will not recover. "Complete restoration of function may be expected in four weeks—an enormous saving of time compared with the year which must elapse before recovery after nerve suture" (Murphy).

Conclusions.

From a study of these cases the following are the conclusions arrived at:—

1. That the diagnosis of an injury to a peripheral nerve ought to be made at the earliest possible time.
2. Successful recovery depends upon early, correct, and continuous treatment.
3. Primary suture should be considered and practised whenever possible.
4. That there should be no unnecessary delay in exploring a nerve if there is sufficient evidence that it has received some injury resulting in a macroscopic pathological lesion.
5. It is almost certain that some macroscopical lesion is present in cases which show no signs of recovery after four months' treatment.
6. That operations on injured nerves should only be done in well-equipped general hospitals, and by those surgeons who have ample experience of such cases.
7. That sufficient attention is not usually paid to the early pre-operative and post-operative treatment, and that paralytic deformities and shortened muscles are often the result of ignorance and neglect.
8. That the extreme gravity of an injury to a peripheral nerve is not sufficiently realised by the general profession.

I wish to acknowledge my indebtedness and appreciation to Colonel T. H. Openshaw, consulting surgeon to the Eastern Command, for his advice in some of the more difficult cases; and I also desire to thank Major A. J. Cleveland and his staff in the electro-therapeutic department of the hospital for numerous suggestions in the treatment of the cases.

GUNSHOT WOUNDS OF THE THORAX: THEIR LATER STAGES.

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SOME of the men who receive gunshot wounds of the thorax die on the field of battle, some in hospitals abroad; others filter through these hospitals and reach the hospitals at home. Those who come home include the less serious cases. The following table and notes deal with 50 of these cases—that is, with the later or terminal stages. On an average the cases were admitted 18 days after being wounded. Wounds of entrance: chest 19, back 12, shoulders 8, sides 7, neck 4.

No.	Non-penetrating.	Penetrating.	Through-and-through.	Hæmothorax.	Aspirated.	Resected.	Metal removed.	Metal still in.	Pneumonia.	Discharged to duty.	Employments III.	Medical boarded.	Died.
1	—	1	—	1	—	—	—	1	—	—	—	1	—
2	—	1	—	—	—	1	1	—	1	—	—	1	—
3	—	1	1	1	1	1	—	—	—	—	—	1	—
4	—	1	—	1	—	—	—	1	1	—	—	—	1
5	—	1	—	—	—	—	—	1	—	1	—	—	—
6	—	1	1	1	—	—	—	—	—	1	—	—	—
7	—	1	1	1	—	1	—	—	1	—	1	—	—
8	—	1	1	1	—	—	—	—	—	1	—	—	—
9	—	1	—	1	—	—	1	—	1	1	—	—	—
10	—	1	—	1	—	—	—	—	—	1	—	—	—
11	—	1	1	1	1	—	—	—	—	1	—	—	—
12	—	1	—	1	—	1	1	—	—	—	—	1	—
13	—	1	1	1	—	—	—	—	—	1	—	—	—
14	—	1	—	1	1	1	—	1	—	—	—	1	—
15	1	—	—	—	—	—	1	—	—	1	—	—	—
16	—	1	—	1	—	—	1	—	—	1	—	—	—
17	—	1	—	1	1	—	1	—	—	1	—	—	—
18	—	1	—	—	—	—	—	1	—	1	—	—	—
19	—	1	1	—	—	—	—	—	—	1	—	—	—
20	1	—	—	1	—	—	1	—	—	1	—	—	—
21	1	—	—	1	—	—	1	—	—	1	—	—	—
22	1	—	—	1	—	—	1	—	—	1	—	—	—
23	—	1	1	1	—	—	—	—	—	1	—	—	—
24	—	1	1	—	—	—	—	—	—	1	—	—	—
25	—	1	1	1	—	—	—	—	—	1	—	—	—
26	—	1	1	1	—	—	—	—	—	1	—	—	—
27	—	1	1	1	—	—	—	—	—	1	—	—	—
28	—	1	—	—	—	—	1	—	—	1	—	—	—
29	—	1	—	1	—	—	1	—	—	1	—	—	—
30	—	1	—	1	1	—	1	—	1	—	—	—	1
31	—	1	—	—	1	—	1	—	—	1	—	—	—
32	—	1	—	—	1	1	1	—	—	—	—	1	—
33	1	—	—	—	—	—	1	—	1	—	1	—	—
34	—	1	—	1	1	—	1	—	—	—	—	1	—
35	—	1	1	1	1	1	—	—	—	—	1	—	—
36	—	1	—	1	1	1	1	—	—	1	—	—	—
37	—	1	—	1	—	1	1	—	—	—	—	1	—
38	1	—	—	—	—	—	—	—	1	—	1	—	—
39	—	1	—	1	—	—	1	—	—	1	—	—	—
40	—	1	—	1	—	1	1	—	—	—	1	—	—
41	—	1	—	1	1	—	—	1	—	—	—	1	—
42	—	1	1	1	—	—	—	—	—	—	—	1	—
43	—	1	1	1	—	—	—	—	—	—	—	1	—
44	—	1	—	1	—	—	—	1	—	—	—	1	—
45	—	1	—	1	1	—	—	1	—	—	1	—	—
46	—	1	—	1	—	1	1	—	—	—	—	1	—
47	—	1	—	1	1	1	1	—	—	—	—	1	—
48	—	1	1	1	—	—	—	—	—	1	—	—	—
49	—	1	—	1	—	1	1	—	—	1	—	—	—
50	1	—	—	1	—	—	—	—	—	1	—	—	—

Non-penetrating.—Seven cases of wounds of thoracic wall did not penetrate pleura. Two of these had hæmoptysis, 4 had hæmothorax; of latter 2 manifested pleuritic friction. One had a small swelling over ribs due to incarceration of piece of cloth; here also pleuritic friction was heard over adjacent area. This came on late in course of illness, probably due to extension of inflammation. One developed pneumonia and another a persistent form of basal congestion or bronchopneumonia. Thus, concussion may cause hæmoptysis, hæmothorax, or pneumonia.

Penetrating wounds.—Most of these had hæmoptysis, some for several days after they were wounded. Several state quite definitely that they did not spit blood and yet they presented physical signs of effusion. In 8 cases ribs were broken, in 4 scapula, in 2 humerus (1 requiring amputation at shoulder), in 1 clavicle. In 1 vertebræ were damaged; in 1 œsophagus was slightly damaged. In 3 pleura had been sewn up, in 1 diaphragm. In 16 cases the wounds were through-and-through; some of these had only short tracks through lungs. Several did not present any physical signs of hæmothorax. In 13 cases resection of rib was done for empyema. Several had physical signs of contralateral disease of lung or pleura, conditions very well described by Sir J. R. Bradford.[1]

[1] Brit. Med. Jour., August 4th, 1917.

Several cases with the physical signs of effusion were not aspirated, as there were no indications of sepsis; physical signs gradually disappeared. Pleuritic friction was frequently heard in the later stages.

Twenty-eight, or more than half, returned to duty in from 2 to 4 months; 6 were discharged to Employments III. and 14 from the Army by medical boards, 6 in consequence of empyema, 4 in consequence of still having metal in lungs, and 4 because of disabilities due to other injuries. One man had a sinus two inches deep between lower ribs, left by some operative procedure, and into this iodoform and bismuth paste was injected; immediately coughing was provoked, and within a few seconds he coughed up pieces of paste size of pea. Sinus healed in a few days. Two patients died from septic pneumonia.

1. Came in with small wound above left clavicle. X rays revealed ragged piece of metal deep in neck, probably in apex of lung.

2. Gunshot wound in back, caused by piece of metal striking glancing blow near inferior angle of scapula. When admitted—four weeks later—right lung was dull and crepitant. Sputum blood-stained. Died three weeks after admission from double septic pneumonia.

Both these cases had septic flesh wounds other than those over the lungs. This association is suggestive of danger.

The operations required at this hospital were performed by Major G. Sichel, now in France, but then senior surgeon.

ABSTRACT OF A PAPER ON

CAPSULATE MUCOID FORMS OF PARATYPHOID AND DYSENTERY BACILLI.

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(From the Laboratory of the University War Hospital, Southampton.)

DURING routine examination of excreta of two chronic paratyphoid carriers I have met with some curious capsulate bacilli which form large mucoid colonies on Endo's fuchsin-sulphite-agar, totally unlike those of *B. paratyphosus B*, but which proved to be a variety of that organism. I have also encountered similar organisms in a case of infection with *B. aertryck*, and in convalescents from dysentery of the mannite-fermenting group.

I have not found them in typhoid, paratyphoid A, or in dysentery of Shiga type. Such cases have been few in number, and possibly they may yet be found; indeed, Professor Tanner Hewlett has suggested to me that all the members of the coli group may have this Proteus-like power of disguising themselves, and he has drawn my attention to a paper by Cecil Revis.[1]

Revis found that when a sample of soil contaminated with human fæces was first sterilised and then inoculated with a certain culture of *B. coli* "very large, jelly-like, clear colonies," quite unlike ordinary *B. coli*, developed at the end of four months. These colonies gave the usual fermentations of *B. coli*, and "on microscopical examination the bacteria were seen to be embedded in a cementing substance." When they were subcultured it was found that "the typical form and the new type seem to be quite dynamic, passing readily from one to the other."

I have had no opportunity of conducting experiments on animals, but I am publishing this account without waiting to do so, because it is important they should be recognised. In addition to Professor Hewlett, I am indebted to Lieutenant-Colonel D. Harvey, Major F. W. Andrewes, and Captain A. C. Inman for examining several of the cultures, to Dr. Doris MacKinnon and Miss Gertrude Long for drawings and charts, and to Dr. Alex. Hill for allowing me to make photographs at the Southampton University College. I shall be most happy to supply other workers with subcultures.

Paratyphoid Mucoids.

In the spring of 1917 the fæces were examined daily of a number of soldiers from whom paratyphoid bacilli had been isolated during convalescence, to determine if the place of the pathogenic bacilli is taken by any special organism, or group of organisms. I hoped that, if the paratyphoid bacilli were crowded out during convalescence, such an organism might be of benefit in treating carriers; a forlorn hope, one must admit.

Pte. S., a chronic paratyphoid carrier, was taken ill at end of August, 1916. His excreta were examined many times. When an emulsion was plated direct on to Endo's fuchsin-sulphite-agar from

[1] Centralblatt für Bakteriologie, 1910, 26

50 to 100 per cent. of colonies were paratyphoid. 116 samples of fæces had been examined; the 116th sample gave 100 per cent. of paratyphoid colonies. In the 117th percentage dropped to 10; a new type of colony appeared, consisting of large, slimy, white, mucilaginous colonies which I have named "Mucoids." During the next 11 days the fæces were examined seven times; average percentage of paratyphoid colonies only 11; mucoids were present in large numbers on each occasion. On twelfth day no mucoids found on plate; percentage of paratyphoid colonies rose once more to 50. (See Chart.) The mucoids

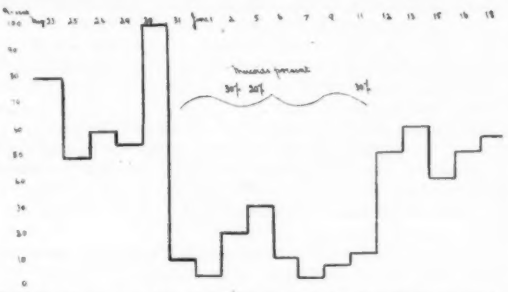

Chart showing percentage of ordinary paratyphoid colonies present on Hndo plate and the fall in percentage when mucoids were present. The proportion of mucoids is given for those days on which it was recorded.

were not found again in seven subsequent examinations, and the paratyphoid colonies were as numerous as ever. The sum percentage of mucoids and paratyphoids is approximately equal to percentage of paratyphoid colonies usually seen when no mucoid organisms are present.

Subcultures were made and usual media inoculated. The organism reacted in same fashion as *B. paratyphosus B*. When first isolated the organism was not agglutinated by a paratyphoid serum, but it did absorb the agglutinins from it. When this strain of mucoids was re-tested eight months later it agglutinated slowly and imperfectly in low dilutions.

One day, when I had wished to prepare a fresh culture from a single mucoid colony, I plated out some peptone-water inoculated five days before. The result was a mixture of mucoids with ordinary paratyphoid colonies. I thought I was working with a contaminated culture. Further investigation proved that the paratyphoid colonies had originated from the mucoid form. If a culture of the mucoid be inoculated into peptone-water and plated every day there will be a few ordinary paratyphoid colonies on plate made on third day; on fifth day they will be in majority. The mucoid colonies give rise to ordinary paratyphoid bacilli.

[Experiments undertaken to test purity were here described.]

with them, like ground glass. If the latter be subcultured several times they will give rise to the luxuriant large mucoids once more.

I have never yet succeeded in obtaining mucoids from the ordinary form. Cecil Revis, it will be remembered, found that his "jelly-like" *coli* colonies passed readily from one form to the other.

In mucoid colonies 24 hours old many of the bacilli measure from 1·5 to 2·5 μ; there is a large number of small coccoid forms 0·75 to 1 μ in diameter. The general appearance of a film made from one of the paratyphoid colonies derived from the mucoids is very different. These derived bacilli are, for the most part, larger; the small coccoid bacilli, so numerous in mucoid films, are rare; very long "involution forms," from 12 to 45 and even 100 μ in length, are the most striking feature.

When a culture of the mucoid form in peptone water is examined by the dark-ground method the number of small cocco-bacilli at once catches the eye, and the rapidity with which these coccoid forms travel is very striking.

When films of the mucoids and of the derived colonies are stained by Benians' "relief stain,"[2] the two can be distinguished at a glance. The picture is quite different from that given by ordinary staining methods; there the bacilli in mucoid cultures are smaller than those in the derived; here, on the contrary, the silhouettes of the mucoid organisms are much the larger. The explanation of this is that they have capsules, while the paratyphoid bacilli in the derived colonies have none.

In films made from the mucoids the faint outlines of the bacilli can be distinguished lying within thick capsules, and there are many round, coccoid forms about 3 μ in diameter. The capsules cannot be stained by ordinary means, such as Welch's method, and it is possible that they are not firm envelopes, but are derived from the mucoid matrix in which the bacilli are embedded and envelop them as drops of dew envelop particles of dust.

There is yet another point of difference between films made from mucoids and those from the derived paratyphoid colonies. In the latter the background of Congo-red is homogeneous, but in mucoid films it is traversed in all directions by an irregular reticulum composed of a deposit of small granules, which appears to be derived from mucilaginous matrix. This deposit is not shown in Fig. 2.

The evidence in favour of classifying these mucoids as a form of *B. paratyphosus B* is overwhelming.

The mucoid organisms disappeared from the excreta of Pte. S. on June 11th, 1917, and shortly afterwards he was transferred to another hospital.

From that time until Oct. 6th only six carriers of paratyphoid bacilli were admitted to this hospital; none a chronic carrier; no mucoids found in excreta. On Oct. 6th Pte. C., a chronic carrier of *B. paratyphosus B*, was sent here from France.

He had been taken ill on Sept. 1st, 1917; severe attack with high fever and hæmorrhage from bowels. He had received two injections, by T.A.B. 2 method, 1½ years before illness.

In first plate, prepared from fæces, a large number of mucoids was present. The mucoids did not disappear; in 59 examinations made while he was here they were found 47 times. Ordinary *B. para-*

Illustrations of Mucoid Forms of Paratyphoid Bacilli.

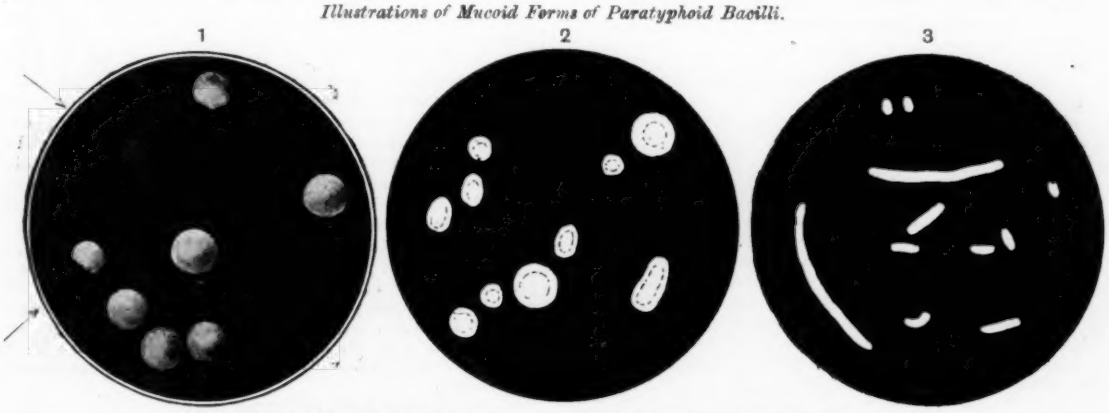

FIG. 1.—Sketch of five-day peptone culture of mucoid isolated from fæces of Pte. S., plated on Hndo's medium. The large colonies represent the mucoids, the small colonies (to which the arrows are directed) consist of paratyphoid organisms derived from them.
FIG. 2.—Drawing of silhouettes of mucoid organisms in case of Pte. S. (Benians' stain.) × 2000.
FIG. 3.—Drawing of silhouettes of paratyphoid bacilli derived from mucoids. (Benians' stain.) × 2000.

The only way in which these paratyphoid organisms derived from mucoids differ from typical paratyphoid bacilli is: (*a*) the colonies on solid media are, as a rule, more granular; (*b*) more long "involution forms" are present than usual. Subcultures from these derived colonies behave in every other respect like ordinary paratyphoid organisms.

The mucoid colonies have about twice diameter of ordinary paratyphoid colony, and after repeated subculture on successive days they may attain a diameter of more than 1 cm. in 24 hours. They are dome-shaped, circular in outline, with a regular margin, and a mucoid appearance absolutely unlike a paratyphoid colony. By transmitted light they are very translucent and are somewhat like frosted glass.

A fresh culture on an agar slope is thick and slimy-like mucus. In a few days the sliminess disappears, except near top of tube, and on re-plating some ordinary paratyphoid organisms derived from the mucoids are found. If a culture on agar be left for several weeks and then plated the resulting growth will consist almost entirely of non-mucoid paratyphoid colonies and a few minute ghostly colonies mingled

typhosus B always present as well. As a rule, 80 per cent. of colonies on Hndo plate, spread with emulsion of fæces, consisted of mucoids and typical paratyphoid colonies.

The mucoid organisms resemble those of Pte. S., with the important exception that they do not remove the specific paratyphoid agglutinins from an immune serum saturated with them.

If a tube of peptone-water or other medium be inoculated with a culture of Pte. C.'s mucoid and incubated for several days the mucoids give rise to ordinary paratyphoid bacilli, which are not only agglutinated to full titre by a paratyphoid serum, but also remove the specific agglutinins from it by absorption.

A very glutinous variety of mucoid was isolated on one occasion from fæces of Pte. C. These glutinous colonies differ only in their small size and their stickiness. Both the mucoids and the glutinoids are precursors of the ordinary form under the conditions employed.

[2] T. H. C. Benians: Brit. Med. Jour., Nov. 25th, 1916.

Aertryck Mucoids.

These mucoid organisms were isolated from another patient.

Pte. W. suffered from acute infection with *B. aertryck* of "Mutton" type, ascribed to infected pork-pie. Typical Aertryck bacilli were isolated five times from fæces, once from urine.

Mucoid bacilli were recovered from fæces once only, at beginning of third week. This mucoid organism is motile, Gram-negative, does not liquify gelatin or produce indol. It turns milk acid in 12 hours and alkaline after four days. Its fermentation reactions in lactose, saccharose, glucose, maltose, mannite, dextrin, and dulcite are identical with those of *B. aertryck*.

When first isolated emulsions of mucoid organisms were not agglutinated by an Aertryck serum, nor did they absorb the specific agglutinins from it. When a culture in peptone-water, which has been growing for a few days, is plated on Endo's medium there are colonies of ordinary Aertryck bacilli mingled with mucoid colonies. The bacilli in colonies derived from mucoids behave in every way like typical *B. aertryck* of Mutton type.

One must conclude, therefore, that there is a mucoid form of *B. aertryck* as well as a mucoid form of *B. paratyphosus B.*

Organisms of the Mucoid Type in Dysentery.

Mucoid colonies have been found in four carriers of *B. dysenteriæ* (mannite-fermenting) and in one convalescent from dysentery, but from whose excreta dysentery bacilli were never isolated.

These mucoids differ in many respects from those found in paratyphoid infections. On an Endo plate spread with emulsion of fæces and incubated for 24 hours the mucoid colonies are about twice the size of usual dysentery colony. On plates made from subcultures they are smaller and reduced to little yellow droplets, which in 24-hour culture adhere to platinum loop and can be removed bodily from surface of medium without leaving a trace behind. In older cultures they become very adherent. Subcultures on agar slopes are hard, rough, and tenacious, with a yellowish colour.

After subculture of these mucoids in peptone-water, bacilli which resemble ordinary dysentery bacilli appear amongst the mucoids. These bacilli are derived from the mucoids.

These derived bacilli are agglutinated by immune sera of Flexner-Y type, but they do not absorb the specific agglutinins for homologous cultures or for typical dysentery bacilli isolated from same patients.

Neither the mucoids isolated from these dysentery convalescents nor the non-mucoid strains derived from them have been shown to be true dysentery bacilli.

ON A METHOD OF

PREPARING MEDIUM FOR THE CULTURE OF PFEIFFER'S INFLUENZA BACILLUS

THAT GIVES PROFUSE GROWTH AND IS TO A MARKED DEGREE SELECTIVE FOR THIS ORGANISM.

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IN view of the prevailing pandemic of influenza it seems a fitting time to publish a short account of this peculiarly valuable medium, though it has been in contemplation to publish a more complete paper with detailed experiments and illustrations. The medium, however, is so favourable for the culture of influenza bacilli that it is deemed inadvisable to delay in making it available for general use.

The method consists in the use of blood digested by trypsin, the preparation of which is as follows:—

Quantities of 0·25 c.cm. of Allen and Hanburys trypsin compound are added to tubes containing 4·75 c.cm. of sterile broth. The mixture is then incubated for 24 hours and any contaminated tubes discarded. 1 c.cm. of blood from a venipuncture is then introduced into each tube, and the mixture of trypsin, blood, broth is incubated for three or four days. The product is then ready for use and is mixed with agar, as if making ordinary blood agar, in the proportion of 5 c.cm. of trypsin-blood mixture to about 30 c.cm. of agar. The trypsinised blood can be used in larger proportions than indicated, with advantage, if large quantities of emulsion be required. My colleague, Captain A. F. Hayden, obtained extraordinarily thick growths by using trypsinised sedimented corpuscles.

The advantage of the proportions indicated, however, is that they are just those quantities arrived at when making diagnostic blood cultures by the method of Douglas and Colebrook.[1] Thus any blood cultures that may prove sterile form ideal material for the medium in question, instead of being a waste product. Indeed, it was by the use of such material that the value of the method was discovered.

It may here be noted that Captain S. R. Douglas suggested the use of trypsinised medium about the date of the paper referred to, but the experiment failed at that time for the reason that the digestion process was not carried far enough.

The incubation of the trypsin-blood mixture should not be prolonged for more than a week. The product retains its properties for six months at laboratory temperature, but after that tends to deteriorate. Possibly it would keep indefinitely in the ice-chest.

The agar used is preferably Douglas's trypagar,[2] and should be faintly but definitely alkaline to litmus paper. Whole blood may be digested by adding trypsin in the proportion of 1–4 of blood, but the product is not so handy for intermittent use as when made in a series of tubes, one of which may be used as required.

The blood used need not be fresh, but may well be citrated blood that has been kept in an ice-chest. Indeed, there is some advantage in using citrated blood, as the trypsinisation seems to proceed more rapidly when citrate is present than when fresh blood is used.

The medium grows influenza freely from the first culture, and it is to a marked extent selective. Thus, it inhibits pneumococci entirely and in a large measure streptococci and other Gram-positive organisms, but apparently favours staphylococci.

It grows the Gram-negative cocci of the catarrhalis group, together with bacilli of the coliform group, freely, but does not favour them in the way it favours influenza bacilli.

The colonies of these bacilli on initial cultures attain a large size, being frequently 3 mm. broad; they are at first hemispherical, and later tend to be flat, and are translucent, with a brownish tinge and a regularly circular outline. The colonies of the catarrhalis group are usually more opaque, more convex, and more deeply tinted; staphylococcal colonies are white. Subcultures usually give quite confluent growths, frequently of the profusion of a typhoid culture, with a similar greasy appearance, but of brownish tinge.

As a rule the bacilli are typical, but not infrequently they are replaced by enormously long filaments. To some extent this filamentous condition depends on variations in the medium, but occasionally the characteristic persists through several subcultures on the special medium, the growth at all times being typical when subcultures are made on ordinary blood-agar. These strains do not emulsify so readily as the typical ones, and subcultures are apt to show only a few discrete colonies, possibly on account of the matting due to the filamentous forms of the organism.

It may not be out of place to record that during the present epidemic I have investigated about a dozen typical cases of the disease presenting these features—sudden onset, fever of 103–104°, prostration and malaise, usually with no symptoms of catarrh, and followed by rapid and usually complete recovery, though in some the malaise has tended to continue.

In every case I have recovered, frequently in profuse and practically pure culture, Pfeiffer's bacillus when making use of West's post-nasal swab, which method I almost invariably use, planting the swabs direct on to plates of trypsinised blood-agar. In the cases where catarrh has been present I have found the bacillus in bronchial and nasal mucus, together with varying quantities of pneumococci and streptococci, as shown by ordinary blood-plates. One case of nasal catarrh gave a pure culture from the nose as well as from the post-nasal space. No single organism, with the exception of Pfeiffer's bacillus, has been invariably—or perhaps frequently—present.

I feel confident, therefore, that if this medium be used, and especially if the post-nasal space be explored, Pfeiffer's bacillus will be found universally associated with the epidemic.

Wimpole-street, W.

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[1] THE LANCET, July 29th, 1916.

[2] THE LANCET, Oct. 10th, 1914.

USEFUL MEDIA

FOR ISOLATION AND CULTIVATION OF MENINGOCOCCUS, ENTEROCOCCUS, AND *B. TYPHOSUS*.

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AND
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As the result of personal experience we wish to draw attention to the following culture-media which in our hands have shown definite advantages over those in common use.

1. *Laked-blood agar medium* for the isolation and preservation of cultures of the meningococcus.

To fluid nutrient agar cooled to 50° C. add 3 per cent. of sterile laked-blood mixture prepared by following procedure:—

A wide-mouthed sterile bottle with volume graduation marks has added to it 10 g. of sodium citrate dissolved in 10 c.cm. of water and is taken to slaughter-house. When a sheep is being slaughtered the blood after the first gush is received into bottle usually up to 1 litre mark; during process bottle is vigorously shaken. On arrival at laboratory 1·25 c.cm. of formalin are added to litre of blood and thorough admixture ensured. The blood is then transferred with aseptic precautions to a ground-glass stoppered bottle and 30 c.cm. of methylated ether are added to one litre of blood. Stopper firmly inserted and bottle shaken; then left overnight in incubator at 37° C.

When required 3 c.cm. of mixture are added by pipette to fluid agar at temperature of about 50° C. It is convenient to have agar stored in flasks of 100 and 200 c.cm.

If immediately required the blood agar is kept at 50° C. for one hour before being poured out into plates or tubes so that ether may be driven off. The same result can be more conveniently obtained by incubating plates overnight at 37° C.; this also tests sterility.

This method of obtaining sterile blood was suggested to us by the work of Fildes and Rajchman[1] and of Bernstein and Epstein.[2] It is in the main a combination of the advantages of both. In making the blood agar the antiseptic action of the ether and the formaldehyde is annulled by evaporation and dilution.

Experiments have shown that fresh cultures may be kept alive on this medium for from 6 to 9 months at 37° C. without transplantion.

This medium is also useful for the cultivation of *B. influenzæ* and anaerobes.

2. *Modification of the Conradi-Drigalski medium.*—The following modification gives excellent results:—

Nutrient agar containing 0·5 to 1 per cent. of lactose is stored in 100–200 c.cm. flasks. To 100 c.cm. of melted agar cooled to 50° C., 3 c.cm. of etherised blood mixture, 1 c.cm. of 0·1 per cent. crystal violet, and 12 c.cm. of Kubel and Tiemann's litmus solution are added, and the medium is poured out into plates which are then incubated overnight to drive off the ether.

3. *A brilliant green lactose bile-salt agar medium.*—The medium has the following composition:—

Lemco 10 g., agar 30 g., peptone 20 g., sodium taurocholate 5 g., sodium chloride 5 g., and lactose 5 g. per litre. Reaction of medium is adjusted to +10 (Eyre) and 0·4 c.cm. of 1 per cent. solution of brilliant green added to each 100 c.cm. of melted medium which has been cooled to 50° C. and is ready for pouring out into plates.

The adjusting of reaction is the most important point in its preparation. If more acid is added specific inhibitory action on *B. coli* is annulled; and if medium is made more alkaline growth of *B. typhosus* is retarded. Many strains of *B. coli* completely fail to grow on this medium; others grow slowly and others quite readily. It is observable that, after a few strains of *B. coli* have grown, subsequently other colonies develop, the acid produced by the first strains evidently reducing inhibitory action of brilliant green on the others.

References.—1. The Sterilisation of Albuminous Culture Media by Ether, P. Fildes and L. W. Rajchman. THE LANCET, 1915, 1., 1232. 2. Bernstein and Epstein: Jour. Infec. Dis., 1906, p. 772, Ueber Pseudomeningokokken aus dem Rachen gesunder Schulkinder verglichen mit echten Meningokokken, unter besonderer Berücksichtigung des Wachstums dieser Arten auf hämatinhaltigen Nährboden. 3. Lieberknecht, August: Archiv für Hygiene, 1908, lxviii., 143.

Clinical Notes:
MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A NOTE ON RE-AMPUTATIONS.

BY W. A. CHAPPLE, M.D., CH.B.N.Z., M.R.C.S., D.P.H.,
MAJOR, R.A.M.C.; PAVILION ORTHOPÆDIC HOSPITAL, BRIGHTON.

TWO facts are of great and increasing significance in the surgery of amputations, and the accompanying illustrations from a case under my care may serve to emphasise these facts. In the first place, it is impossible to re-amputate in the presence of pus if the ordinary

FIG. 1.—Stump showing projecting bone on May 10th, 1918, primary amputation having been performed on March 22nd, 1918.

sutures are used without great sacrifice of length of bone, on the one hand, or a certainty of breaking down and parting of the flaps on the other hand. In either case the last condition of the stump may be worse than the first. Secondly, by the use of "button sutures," as shown in Fig. 2, the

FIG. 2.—The same stump four days after operation on May 11th, 1918. Dead bone has been removed, but the whole of the skin flaps retained.

following advantages are obtained: (*a*) earlier operations can be undertaken, with the saving of weeks and even months of time; (*b*) length of bone can be saved; and (*c*) primary union can often be secured, and earlier union almost always, and this notwithstanding the presence of pus both before and after the operation.

[A third illustration supplied by the author has been omitted out of consideration for space. This photograph demonstrated that the edges of the wound did not break down, but that, on the contrary, union took place in 12 days.]

A NOTE ON LICE AND SKIN DISEASE.

BY J. F. SMITH, M.B.,
CAPTAIN, R.A.M.C. (T.C.); OFFICER IN CHARGE, SKIN DEPARTMENT, —— GENERAL HOSPITAL, FRANCE.

ATTENTION has recently been directed by Captain H. C. Semon and Captain H. W. Barber to the importance of pediculosis as a cause of cutaneous disease in the Army.[1] While it has always been recognised that lice can and do give rise to such conditions as impetigo and ecthyma, considerable credit is due to these authors for, firstly, showing that in the Army *Pediculus corporis* frequently deposits its ova on the pubic hair, thus defeating such antiparasitic measures as are directed only to the clothing and blankets; and, secondly, for showing that the lesions, and still more the distribution of the lesions, are sufficiently characteristic to enable a diagnosis of pediculosis to be made, even in the absence of live parasites or ova.

The object of this brief communication is to show that the contentions of Semon and Barber are entirely borne out by the experience of another base hospital.

In the last 4430 cases which passed through my hands there were 1074 of scabies and 1120 of pediculosis, the latter in every case carrying live pediculi or ova. There were in addition 919 cases of pyodermia (ecthyma, &c.) in which the distribution of the lesions strongly suggested pediculosis, but in which no absolute evidence was found. (As a majority of my patients come via C.C.S. it is not unreasonable to assume that for every case arriving with live parasites there is at least one who has been freed from them.)

A further point of some interest emerges. In this series of 4430 patients there occurred 152 cases of "trench fever." No case in which any cause—such, for example, as tonsillitis—for the pyrexia could be discovered was included, and all the 152 cases showed the symptoms which are recognised as characteristic of "trench fever." 143 of these occurred in patients suffering either from scabies or pediculosis, an incidence of 4·6 per cent.; while 9 only occurred among all the other patients, an incidence of 0·67 per cent. It would be unwise to draw deductions from so few cases, but the above figures certainly lend some support to the theory that trench fever is carried by lice.

Conclusions.—1. In the B.E.F. it is not exceptional for *Pediculus corporis* to lay its eggs on the pubic (and occasionally axillary and peri-anal) hair, thus defeating the antiparasitic measures in ordinary use. 2. Patients frequently reach the base with marked pediculosis, even after weeks' residence in C.C.S. 3. Pediculosis is almost certainly as serious a cause of disabling skin disease as scabies. 4. There is some evidence that lice are the carriers of the infection of "trench fever."[2]

I am indebted to Lieutenant-Colonel M. M. Rattray, D.S.O., R.A.M.C., for permission to publish these notes.

A CASE OF ACUTE ENCEPHALITIS.

BY W. B. RUSSELL, M.B. CAMB.,
MEDICAL OFFICER AND LIEUTENANT (T.), 2ND VOLUNTEER BATTALION, R.W.F.

THE following case seems of sufficient interest to record in THE LANCET.

On Thursday, June 27th, I was called in to see a woman, aged 29, apparently suffering from influenza, which began three or four days before, with vomiting, diarrhœa, pains in back, sweating and insomnia. I found her suffering from pain behind right scapula; T. 104°; no headache. The next day she was better, but had tendency to retention of urine.

On Sunday (June 30th) she was much worse, with furious delirium. She tried to jump out of the window, and smashed a big hole in window-pane with head. She refused food and drink, and had no sleep, requiring constant attention to prevent her escape. Next day she was quieter and took food and drink freely, but was still without sleep.

The following day difficulty in swallowing was noticed, and liquid escaped from a corner of her mouth. A day or two later she developed third nerve paralysis, with squint and complete inability to swallow. Attempts to administer drink led to convulsions, cyanosis, and partial suffocation, as in hydrophobia. Her limbs were rigid, but not so the jaw muscles; otherwise the case resembled tetanus, as the slightest touch or shaking of the bed provoked general convulsions. She rapidly grew worse, T. rose to 105·7°, and she died on July 5th. There was urinary incontinence.

Dr. A. N. Leeming, who saw the case, detected friction and signs of congestion of right lung, but sputum was not rusty. There was a cough and profuse herpes on lips and nostrils. He performed spinal puncture after death, and drew off clear c.s. fluid which contained no meningococci.

Dr. Leeming agrees with me in considering this to have been a case of epidemic meningo-encephalitis. There was no lethargy until near the end.

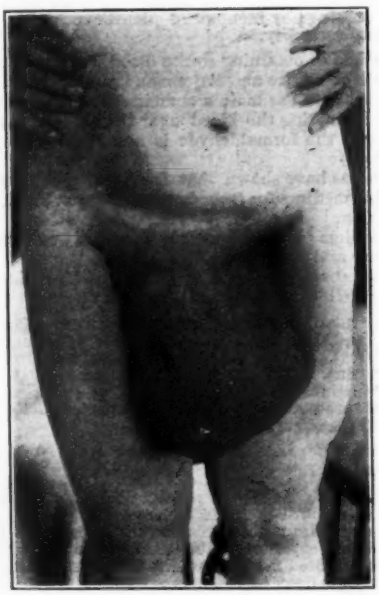
Colwyn Bay.

RADICAL CURE OF A VERY LARGE HERNIA.

BY J. ARTHUR BROWNE, B.A., M.B., B.CH. R.U.I.,
SURGEON, SAFFRON WALDEN HOSPITAL.

THE unusual size of this right oblique inguino-scrotal hernia would seem to justify a note thereon. It was larger than the patient's head and made one think of elephantiasis scroti. The penis had completely disappeared, and the urine issued through a channel resembling a deeply-sunk navel.

The patient, aged 28, very stout, first noticed his rupture three years previously. Had suffered little inconvenience; able to drive van. I performed a radical cure by Bassini's method, but without transplanting the cord. The opening of the canal admitted three fingers with difficulty. Sac was very thick and voluminous, with numerous large and



Condition before operation.

tortuous veins; and contained two feet of ascending colon, the cæcum and appendix, and six feet of ileum with mesenteries. It required considerable patience to restore contents to abdomen.

Owing to thickness of sac and firm adhesions to scrotal tissues, I thought it well to divide it across and leave the distal end *in situ*, separating larger proximal portion and cutting it away after tying neck with thick silk high up in inguinal canal. There was some orchitis thereafter, which subsided in a few days, and part of distal end of sac sloughed, causing slight suppuration in lower end of operation wound. Otherwise recovery was uneventful.

Newport, Essex.

[1] Brit. Journ. of Derm. and Syph., July-September, 1917, Pyodermia of Parasitic Origin.

[2] The above was written before direct evidence on this point had been obtained by the Commission on Trench Fever. The figures have since been brought up to date (May 4th, 1918).

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

The Prevention and Arrest of Lice-borne Diseases.

A MEETING of this society was held on July 17th, Sir RICKMAN GODLEE, the President, being in rhe chair, when Colonel WILLIAM HUNTER, C.B., A.M.S., gave a lecture on the Prevention and Arrest of Lice-borne Diseases (Typhus, Relapsing, and Trench Fevers) by New Methods of Disinfection. The speaker laid special stress on the importance of trench fever. Of the medical sick in the Eastern Command 10 per cent. were cases of trench fever and about another 10 to 14 per cent. came from those admitted for P.U.O. Any method of disinfection must be available at all times and must be easily devised and worked. The lecturer then gave a description of two forms of disinfection which he had used on an extensive scale in Serbia, in Egypt, and in Salonika. The first was barrel disinfection, a method devised by Lieutenant-Colonel G. E. Stammers, which was very effective and very cheap. For this an ordinary wine barrel was needed (or a sanitary dustbin). One large and four or five smaller holes are bored in the bottom, and the barrel is placed on an iron boiler containing water which is heated from a fire trench, the barrel being separated a few inches from the boiler by rings or bricks. The lid is kept on tightly by a stone placed on top. The clothes are placed inside. The barrel heats in about half an hour to 100° C., and disinfection is complete an hour later. The principle on which disinfection is carried out is the destructive effect on protoplasm of steam in motion. Three barrels could be heated over one fire-trench, but if this were done it was impossible to guarantee eqnal and efficient heating power in all three barrels. Four barrels should be sufficient for a regiment, and clothes should be disinfected every three weeks. For disinfection on a large scale (i.e., masses of troops) within a short space of time he used the railway van disinfector. This was devised also by Lieutenant-Colonel Stammers, and modified by himself. For this method modified ordinary luggage vans are used. Steam from the engine is discharged backwards into the vans by means of pipes running along them longitudinally. The clothes are either hung on hooks or across bars, or done up into bundles and placed on shelves all round the van. When the doors are shut the steam is turned on. At first water is seen to drip from underneath the door, and at this time the clothes are wet. At the end of half an hour disinfection is complete, there is no drip from around the door, and the clothes are only very slightly damp, becoming quite dry about half to one minute after being shaken out. Railway van disinfection had been used extensively in Egypt, and by this method the complete kit of 8000 men could be disinfected in four days, or 18,000 in ten days. He had made tests by placing various articles inside the van. Eggs were boiled hard in 10–15 minutes, potatoes became floury, cultures were sterilised, and a thermometer packed in the centre of a large bundle of clothing registered 105° C. The initial cost of the van disinfector was £50–£60, that of the barrel disinfector a few shillings. Photographs were exhibited showing the actual disinfection of 500 Turkish prisoners, and charts were displayed illustrating the remarkable checking of the incidence of relapsing and typhus fevers in Serbia and the lowering in the mortality rate. He considered that disinfection could be carried out by these practical measures more effectively and expeditiously and more cheaply than by any other form of disinfector at present in use.

In answer to various questions put to him by members present, Colonel HUNTER said that steam in motion at any temperature over 70° C. destroyed protoplasm. No part of the scheme was devised to raise the pressure in the van, but the steam escaped from the boiler into the van at a pressure of 4–5 atmospheres. The heat of condensation and the pressure produced a temperature of 105° C. in 5–10 minutes. He had had no accidents with these disinfectors. During the time represented in the charts the conditions were of the worst description.

Reviews and Notices of Books.

I. *Diseases of the Heart.* With a Chapter on the Electro-cardiograph. By FREDERICK W. PRICE, M.D. Edin. London: Henry Frowde and Hodder and Stoughton. 1918. Pp. 472. Price 21*s.* net.

II. *Clinical Disorders of the Heart-beat.* By THOMAS LEWIS, M.D. Lond. Fourth edition. London: Shaw and Sons. 1918. Pp. 120. Price 6*s.* net.

I. Dr. Frederick Price adds a comprehensive work on an important subject to the practitioner's library. It may seem that in this particular branch of medicine there is nothing further to say for the moment. But Dr. Price does not aim at new contributions to his subject. By great care, and by the use of an amazing amount of material, he has accomplished what many readers have been waiting for, giving us a complete account of the diagnosis, prognosis, and treatment of heart diseases by modern methods in association with all the invaluable teaching bequeathed to us by the older masters of clinical observation. Matters of merely theoretical interest have been omitted, leaving room for the essentially practical points needed by the practitioner. The author's presentation of the newer teaching on cardiac arrhythmia is lucid and not too prolix, and a large series of carefully selected curves assists greatly in the elucidation of this difficult subject. In these chapters the work of Mackenzie, Cushny, Wenkebach, Lewis, to say nothing of the author's own valuable researches, has been admirably dealt with, and the reader may feel assured that he is getting the composite results of all these investigators rather than the view-point of one observer only. We are greatly impressed by the care shown in the arrangement of the subject-matter and by the literary exactness of the text. If we picked chapters for special commendation, we should specify those on Heart Failure: its Symptomatology, Auricular Fibrillation, Auricular Flutter (which has already appeared in these column), Carditis in Childhood, and Angina Pectoris—Pseudo-angina. We are pleased to find a frank invitation to the practitioner to combine with his own clinical experience the results of the graphic method of investigation as yielded by the more easily managed instruments, such as the sphygmograph and the ink polygraph. The results of the electro-cardiograph are reserved for a special chapter at the end of the book.

We regret the brevity of the chapter on Functional Disorders of the Heart and the absence of any comparative account of the different clinical features observable in the course of the different forms of valvular disease. It is very helpful to the student, for example, to point out the very different symptoms that are apt to arise when a heart that is the subject of aortic incompetence slowly fails, and when the same organ fails after years of a well-established mitral incompetence. And again, the different manifestations of cardiac inadequacy in a case of mitral stenosis and a case of mitral regurgitation. These broad and more philosophical views are useful, and might have been expected in a work of this scope. We note a good account of "primary cardiac overstrain" ("heart strain" would surely be a sufficient and unequivocal term?), but we think it is somewhat spoilt by the long note supplementing the account, and referring to the discussion on this subject at the Royal Society of Medicine. The author's own ideas are here obviously subjugated to those of Mackenzie, and the artificial adherence accounts for the confusion occurring in the following sentences. "While there is much to be said for the theory that these cases are the result of toxic poisoning following some microbic invasion, the practical evidence is too vague for dogmatism. What the toxins may be, or how produced, does not, so far, invalidate the results of the treatment advocated by Mackenzie. The treatment is mainly based on the assumption that the root of the malady lies in the central nervous system, the cardiac symptoms being merely incidental." In the etiology of aortic incompetence we find no reference to syphilis, which we regard as second only in importance to rheumatic fever in this connexion. We do not agree with the author that mitral stenosis results from acute rheumatic endocarditis. But these are small matters. We repeat our praise of the clearness of presentation of the subject and

the practical scope of the work. The production of the book is admirable and deserves a word of praise on its own account.

II. The appearance of the fourth edition of Dr. Lewis's excellent handbook testifies to the growing interest in modern conceptions of cardiac arrhythmia, and the increasing desire on the part of the practitioner to understand the new terminology and to weave it into his everyday practice. This little book not only serves to lay the foundation of such knowledge, but there is very little of any practical consequence in the subject which the reader will not find in the brief compass of its pages. "The chief derangements of the rate and sequence of the pulse and heart-beat as they are felt, seen, or heard," are here briefly but adequately described. The several chapters deal with sinus arrhythmia, heart-block, extra-systoles, tachycardia, auricular flutter, auricular fibrillation, and pulsus alternans. Dr. Lewis reminds the reader that there are few important disorders of the heart-beat which the unaided and practised senses may not recognise. So long as that fact is continually emphasised we may have no fear that mere instrumental records will displace the far more important training of the eye and hand and ear. The function of instruments of precision is to supplement and confirm these, not to supplant them—a fact which Dr. Lewis does not fail to make abundantly clear. In discussing the differential diagnosis of paroxysmal tachycardia Dr. Lewis says that in his "judgment there is no sufficient evidence that a healthy heart is ever damaged by muscular exertion, however severe or prolonged." "Is it to be supposed," the author says, "that the organ is so ill-protected that it is to be damaged by actions natural to man?" But surely there is a fallacy here: "however severe or prolonged" may include very *unnatural* effort.

I. *The Basis of Symptoms: The Principles of Clinical Pathology.* By Dr. LUDOLPH KREHL. Translated by A. F. BEIFELD, M.D. Third American edition; seventh German edition. London and Philadelphia: J. B. Lippincott Co. Pp. 517. Price 21*s.* net.

II. *Symptoms and Their Interpretation.* By Sir JAMES MACKENZIE, M.D. Edin., F.R.S. Third edition. With 19 figures. London: Shaw and Sons. 1918. Pp. 318. Price 8*s.* 6*d.* net.

I. THE word pathology has been wrested from its original broad meaning during the past two decades, and has come to connote that section of etiology which has to do with laboratory investigation—morbid histology, morbid anatomy, and bacteriology. To the branch of medicine in which laboratory investigation and clinical examination are intimately associated—hæmatology, urology, &c.—the term "clinical pathology" has been applied. It is not in this sense, but in one which much more nearly approximates to the older meaning of the terms, that use is made in Dr. Krehl's volume, "The Basis of Symptoms." "Pathological physiology" expresses equally well the material of which this book is a careful and forbearing study. The work is, in effect, an attempt to explain how diseases arise rather than to unfold their several manifestations. Without giving way to ungoverned speculation the writer attempts "to foster a more definite leaning upon the biological sciences in general." The author's aim is summed up when he says that "he who will understand disease must see clearly the inter-relationship of all the organs—must consider the unit only in its bearing upon the ensemble." To a few readers this book will appear, especially at first, to leave so many facts unexplained that it hardly justifies itself. But fuller acquaintance will, they may be assured, abolish this idea. In any case it is all to the good to know exactly what we know and what we do not, and a definite benefit accrues from the exposure of those gaps in an exact knowledge to fill which must be the aim of every student imbued with the scientific spirit. The chapters deal respectively with the circulation, the blood, infection and immunity, respiration, digestion, nutrition, and metabolism, glycosuria, gout, constitutional diseases, fever, the secretion of urine, and nervous diseases. The general sections upon the heart are admirably lucid, and tend to broaden the oft-times contracted horizon of the practitioner. Those paragraphs dealing with the cardiac arrhythmias are of special interest. The author utters a useful warning against regarding our current ideas on this subject as being based upon more than a useful hypothesis. He is of opinion that nervous influences play an important rôle here, and are not sufficiently allowed for. Even in so-called heart-block he considers that cerebral changes play a part—witness its occurrence in some cases of cerebral arterio-sclerosis, in which there is a complete absence of disease of the heart muscle. In the chapter on infection and immunity (written with the collaboration of Dr. E. Levy) there is an illuminating synopsis of our knowledge of the phenomenon of anaphylaxis, with consideration of its many bearings, and the reasons for regarding infection itself as an attenuated and protracted form of the anaphylactic state (Friedberger). There is a full account of the known relations between the bacteria of the alimentary tract and disorders of digestion, including constipation, and we welcome a criticism of the ill-defined and much-abused application of the term auto-intoxication. There is a careful analysis of the mass of data relating to obesity and its pathological associates. Acidosis is dealt with in the light of modern research. The still vexed problems of gout and diabetes receive guarded handling, and the disappointment that awaits us at the end of both these chapters is born of a sense of the gaps in our knowledge rather than of the inadequacy of the author's guesses, concerning which he exercises laudable forbearance. In the discussion on fever there occurs the following paragraph *à propos* the question whether or not the elevation of temperature is directly beneficial to the infected organism: "In recent years there has been a tendency to apply the Darwinian theory to pathological processes in general, and to say, for example, that fever could never have survived throughout immeasurable time were it not inherited as a useful weapon in the struggle for existence. Yet we may question to what extent the Darwinian theory applies to pathological conditions, for it seems equally reasonable to regard fever as a blind reaction against an injury, possibly useful or possibly harmful. The question is not one that can be solved by such philosophical considerations, and the final answer must be based upon established facts, derived either from bedside observations or from animal experiments." This reflection forms a good example of the temperate manner in which the author approaches most theoretical questions arising in connexion with pathological processes. In conclusion, we strongly recommend this work to all readers who are not content merely to accumulate a mass of unassorted clinical facts, but who wish to understand "how disease arises out of health; to be a nature philosopher." The book is the most thoughtful and complete account of this aspect of medicine that we have seen.

II. We welcome the third edition of Sir James Mackenzie's "Symptoms and Their Interpretation," the appearance of which proves the value attaching to the original work, and incidentally it also proves the interest shown in the author's particular method of approaching the study of disease processes. This book demonstrates to what a high degree of precision careful clinical observations can attain; and also how highly suggestive are the many questions bearing on general pathology arising out of them. The chapters dealing with pain, the mechanism of its production, its radiation and its bearing upon diagnosis, would alone make the work an extremely useful book of reference. It is possible that the author relies on symptoms too largely in the study of medicine, asking them to carry more weight than is wise; risking, in this manner, both accuracy of diagnosis and therefore efficacy of treatment. That is largely a matter of opinion. If this book serves to show how much knowledge of disease may be gained by methodical study of subjective states, and how important are many symptoms that too often get the scantiest attention, it will have achieved valuable results. Too often the practitioner forfeits data of the utmost significance by neglecting to take stock of the patient's sensations. This book is written largely in order to prevent such an error. Granted the need for care in collating and in interpreting the sensations, Sir James Mackenzie shows how both of these desiderata can be attained. He points out how this line of study suggests subjects for further research in the direction of clinical investigation, with a useful warning against regarding "original research" as being covered by laboratory work or as being best undertaken by the raw youth at the primitive stage of his medical career. We should like to see this book in the hands of all thoughtful practitioners, and we can think of no more appropriate gift to the profession at the time of the author's retirement from active practice than the issue of this present edition.

Blood Pressure from the Clinical Standpoint. By FRANCIS ASHLEY FAUGHT, M.D., formerly Director of the Laboratory of Clinical Medicine at the Medico-Chirurgical College, Philadelphia. Second edition, thoroughly revised. Illustrated. London and Philadelphia: W. B. Saunders Company. Pp. 478. Price $3.25 net.

Blood Pressure: Its Clinical Applications. By G. W. NORRIS, M.D. Third edition. Philadelphia: Lea and Febiger. 1918. Price $3.50.

THESE two books on blood pressure have proved their acceptability by passing into second and third editions respectively. Both can be warmly recommended. Dr. Faught's book has already received notice in these columns. It is thoroughly practical in its outlook, clearly written, and adapted to the needs of the practitioner. As the author states in his preface, his aim has been to avoid unnecessary discussion and the introduction of theoretic and inconclusive data. This makes it all the more valuable to those who wish for a straightforward account of a subject that they fear has become so technical as to be of interest only to the few.

Dr. Norris's book deliberately deals with some disputed aspects more fully. His description of the various instruments used would alone make it of value. But we must admit that some of his theoretical discussions have interested us as much as anything in the book. Thus the chapter on the functional efficiency of the circulation as determinable by blood pressure estimation and allied tests is largely destructive criticism, but none the less helpful at a time when perhaps too much reliance may be placed upon such methods in estimating the capacity of a recruit's heart for military service. The chapters on arterial hypertension are suggestive and full of fresh ideas. We wish we could have received more information on vascular crises; the author's classification is useful, but on a subject so little understood we should have liked more of the illuminating discussion he has provided on some of the other topics he reviews.

Practical Organic and Bio-Chemistry. By R. H. A. PLIMMER, Reader in Physiological Chemistry, University of London. New and revised edition. London: Longmans, Green, and Co. 1918. Pp. 636. Price 18*s.*

THIS is a revised edition of Dr. Plimmer's admirable handbook for practical work in physiological chemistry, with the scope extended to include the botanical side also. Sections such as those on bile and nucleic acids have been enlarged, and minor additions appear throughout. The book, though intended mainly for medical students, and dealing very fully with such things as proteins and enzymes, may also be taken as a general course in practical bio-chemistry. Experiments suitable for a preliminary course are indicated by an asterisk. Both author and students are fortunate in the early appearance of a new edition, bringing the matter of a rapidly developing subject fully up to date.

JOURNALS.

Quarterly Journal of Experimental Physiology. Editors: E. A. SHARPEY-SCHAFER, W. D. HALLIBURTON, C. S. SHERRINGTON, E. H. STARLING, A. D. WALLER. Vol. XII., No. 1. London: Charles Griffin and Co. 1918. Pp. 1-95. Price 7*s.* 6*d.* net.—Capillary Phenomena Observed in Blood Cells: Thigmocytes, Phagocytosis, Amœboid Movement, Differential Adhesiveness of Corpuscles, Emigration of Leucocytes, by John Tait. After some prefatory remarks on Rhumbler's hypothesis that ingestion of particles by cells is a simple physical process, the author deals with his own observations on the three types of blood cells found in the crustacean Ligia: (1) the explosive corpuscles; (2) the hyaline, which do not explode but flow onward on a glass surface; and (3) granular thigmocytes. Thigmocytes are defined as cells which are unstable in contact with a non-greasy foreign matter. Mammalian platelets are thigmocytes. The mere spreading on glass cannot be taken as evidence of vital activity. Phagocytosis involves a relation among three separate factors—phagocyte, particle, and surrounding medium (plasma). As to the mechanism of amœboid movement, it is not in every case due to alterations of surface-tension, but only in some cases—viz., when the movement is associated with instability of the cell substance while in contact with a foreign body. The fully granular cells of crayfish and cockroach blood are instances of unstable amœboid blood. Blood cells are known to show selective adhesions or differential adhesiveness, and, in fact, there is a delicately balanced relation in respect to adhesiveness between individual blood cells and other objects with which they come in contact—a fact which serves to broaden the basis of the investigation of "agglutinins."—The Blood of *Astacus fluviatilis*: A Study in Crustacean Blood, with Special Reference to Coagulation and Phagocytosis, by John Tait and J. Donald Gunn.—Carbohydrate Metabolism in Relation to the Thyroid Gland. III. The Effects of Thyroidectomy in Rats on the Gaseous Metabolism, by W. Cramer and R. M'Call. In rats removal of the thyroids and parathyroids does not produce severe disturbance of metabolism. The curves of CO_2 output and O_2 intake and R.Q. do not differ essentially from those of a normal animal. The power of the body cells to oxidise carbohydrates is not impaired, and it is inferred that the carbohydrate metabolism in experimenial hyperthyroidism is not due to a direct stimulating effect of the thyroid hormone on the oxidation of carbohydrates.

The American Review of Tuberculosis. Baltimore: National Association for the Study and Prevention of Tuberculosis. Price 35 cents.—The issue for May is exceptionally well illustrated, but there are only two original contributions. The first, by Dr. W. S. Miller, is a study of the nerves and ganglia of the lung in a case of pulmonary tuberculosis. He concludes with three queries: (1) May not the increased activity of the glands be due to the irritation of the nerves and ganglia? (2) May not the irritating and productive cough in some cases of tuberculosis, and the dry hacking cough in other cases, be due to nerve irritation? (3) May not the nervous hyperæsthetic condition accompanied by very shallow breathing which is a frequent result of gas poisoning in the present war be due in some measure to irritation of this nervous apparatus of the lung? The author leaves the answers to these questions in the hands of the physiologists and clinicians, who may, perhaps, be tempted to suggest that the notes of interrogation are superfluous, and that the author has been unduly cautious and diffident in his conclusions. The second original contribution is by Dr. G. E. Bushnell, and is a long clinical lecture on the signs and their interpretation in advanced pulmonary tuberculosis. It is a well-worn subject, but the paper is well written and illuminated by the shrewd observations of a clinician.

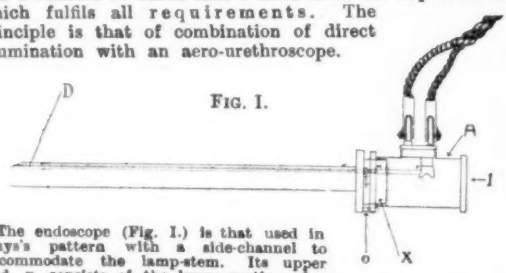
The Military Surgeon (Washington, D.C., U.S.A.).—In the June number there is a review of a paper issued by the Surgeon-General of the U.S. Army, quoting many foreign papers on the reconstruction and re-education of the disabled soldier—a task, as the reviewer states, that will require the most persevering patience and the sanest human sympathy. It is then considered whether these invalids are to be under civilian or medico-military control. The importance of enthusiasm for an ideal in the superintendent is obvious, also the benefit of judicious discipline for the patients during recovery. The editor observes that the military officer is promoted through his corps, until having proved his superior ability, study, and experience, and knowledge of his brothers-in-arms, he is selected to be a general officer; but has no knowledge of the medical profession sufficient to acquire its point of view. Therefore, the medical authorities of the Army, who have learned to work with the other branches, must be put in charge and given a staff sufficient in number and rank to take care of the disabled men in the most efficient and economical way. Particularly as they will be held responsible for the results, whoever has the organising of the scheme, while, in so far as they are hampered in their work, by so much the fittest of their patients will not completely recover.—Captain Wallace H. Pratt, of the Medical Reserve Corps, U.S.Army, before the war apparently a railway surgeon, makes valuable remarks on the prevention of pneumonia in camp, by diluting the infection with fresh air and decreasing it by attention to the mouth and fauces. His advice may thus be summarised: 1. Give the men enough blankets so they can endure the cold and neither lose their rest by being awakened by chill, nor be poisoned because they have been compelled to cut off their ventilation. 2. Do not give late leave; bring men home early so they can go to bed soon. 3. Keep the air of stove-heated tents moist. 4. Spray the men's noses daily once, gargle their throats twice, and make them clean their teeth four times. As for trains (his advice may be commended to officers R.A.M.C. in trains on the Continent) he notes that men moving by rail remain long without exercise in compartments often stuffy and overheated. He suggests that on the train men should be made to do physical drill in the corridors, while windows should be regularly opened; and that when the train stopped the men should be turned out of it and made to walk about. There is a very interesting note by Dr. Lloyd Garrison, assistant librarian of the Surgeon-General's Office, on a mistaken diagnosis of infectious disease in Paris about 1870, which prefaces an account, by Lieutenant N. R. Schiff, of a medical ward for acute cases, designed to avoid cross infection by means of screens made of sheets hung between the beds.

New Inventions.

A NEW AERO-URETHROSCOPE.

THE urethroscope, which up to the last three or four years was used only by the few specialists mostly in London and the large teaching centres in the provinces, has now come into general use owing to the establishment of venereal clinics, and medical officers in charge should be thoroughly acquainted with the appearance of the normal and abnormal urethra, if they are to treat chronic gonorrhœa successfully. For this reason I have thought it necessary to try to improve on existing patterns of urethroscope. There are two main types; the first, those through which the urethra is seen by direct illumination, and the second, those through which it is seen by indirect illumination or reflected light. By the use of the first type the urethra cannot be distended with air, but by the second type, of which Wyndham-Powell's aero-urethroscope is the best, all necessary instrumental work can be done with the urethra distended. I think, however, that the size and weight of the illuminating and operating mechanism are serious obstacles to its employment generally, and I venture to think that I have made an improvement which fulfils all requirements. The principle is that of combination of direct illumination with an aero-urethroscope.

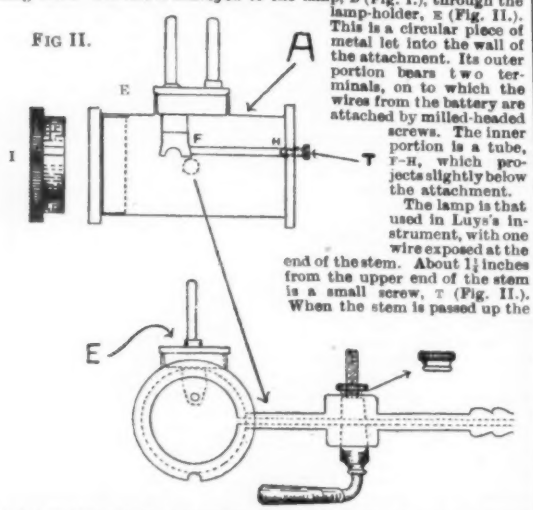
FIG. I.



The endoscope (Fig. I.) is that used in Luys's pattern with a side-channel to accommodate the lamp-stem. Its upper end, X, consists of the lower portion of a cone mounted on a flange in which is fixed an upright guide-pin, O.

The attachment, A, is a metal cylinder. Its lower end is a flange tapered internally to fit on to the cone, X. The upper end is made to receive either the examination cap, I, or the operating cap, C (Fig. III.). The examination cap is a lens of focal length corresponding to the length of the endoscope and is mounted in a metal rim, which fits into the attachment. The joint is air-tight, but loose enough to allow removal of the cap when the urethroscope is being used. Current is conveyed to the lamp, D (Fig. I.), through the lamp-holder, E (Fig. II.).

FIG II.



This is a circular piece of metal let into the wall of the attachment. Its outer portion bears two terminals, on to which the wires from the battery are attached by milled-headed screws. The inner portion is a tube, F-H, which projects slightly below the attachment.

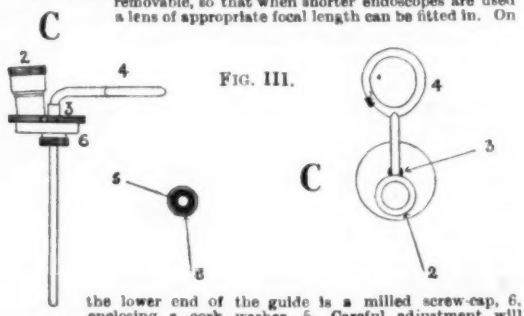
The lamp is that used in Luys's instrument, with one wire exposed at the end of the stem. About 1¼ inches from the upper end of the stem is a small screw, T (Fig. II.). When the stem is passed up the tube F-H the exposed wire makes contact in F, and the screw T engages in the lower end of F-H. Opening into the attachment at right angles to the lamp-holder is the tube with tap for attaching the bellows.

To use the instrument the lamp is screwed into its place, and the wires from the battery are connected up to the lamp-holder. If the light is satisfactory the rubber bellows are attached to the tube. When the endoscope is in position in the urethra and its interior has been carefully dried the attachment is fitted on to the cone, the lamp passing down the channel which just accommodates its widest diameter. To make the urethroscope air-tight gentle pressure of the endoscope is made upwards to the attachment.

The urethra is now inflated and examined; if no abnormality is discovered the examination comes to an end, but if there is need for operation the examination cap is removed and the operation cap is fitted in its place.

This is a metal disc perforated by two tubes. One (Fig. III., 2) is an eye-piece; the other is a guide, 3, with a bore equal to a No. 2 bougie English gauge, for the operating handle, 4, the lower end of which is tapped to receive a probe or knife. When the operation cap is in position the operating handle just clears the side of the endoscope. To give room for the movement of the handle the eye-piece is not placed in the centre of the disc, but a full view of the field is obtained by inclining it slightly from the vertical. The lens in the eye-piece is removable, so that when shorter endoscopes are used a lens of appropriate focal length can be fitted in. On

FIG. III.



the lower end of the guide is a milled screw-cap, 6, enclosing a cork washer, 5. Careful adjustment will compress the cork washer round the operating handle, to prevent leakage of air, and will allow easy up-and-down and slight lateral movement. It is advisable to lubricate the handle with a drop of lubafax. When the handle is not used the guide is closed with a small metal plug.

The attachment is about 3 oz. in weight, and the whole urethroscope can be held easily in its place with the left hand gripping the urethra round the tube, leaving the right free to do the necessary manipulations.

The urethroscope has been made by Mr. Clive Wilson, Albert Road, Southsea, who has with much skill and ingenuity overcome many difficulties before a practical instrument could be turned out. The lamp-holder is entirely his idea, and the insulation is such that if the lenses are removed the whole instrument can be sterilised by boiling.

A. CAMBELL, M.B., Ch.B. Manch.,
Medical Officer, Portsmouth Venereal Clinic.

AN IMPROVED MON-AURAL STETHOSCOPE.

FOR some time past I have been using the mon-aural stethoscope which I have modified in such a manner as enables me to hear through it with both ears at the same time. The instrument has proved so satisfactory with me that I venture to bring it before the profession. It consists of an ordinary mon-aural stethoscope in two parts, to which is attached a piece of indiarubber tubing about 16 inches in length. This is connected at the ear-piece and communicates with the bore; at the free end of the rubber tubing is a comfortably fitting ear-piece. When in use the small free ear-piece is inserted into the ear farthest away from the examining side. The stethoscope is placed in position on the chest and used in the ordinary manner. There is no need to remove the tubing during the entire course of the examination and it in no way interferes with the replacing of the stethoscope into different positions. The advantages of this instrument over the ordinary mon-aural stethoscope are that both ears are engaged and the examiner can better concentrate his attention, since all extraneous sounds are prevented from reaching the otherwise unused ear and interfering with the examination. The sounds are louder, more clear, and distinct, owing to better coördination. For medical men doing work at the front or those returning whose hearing may have been affected by constant shell fire this instrument would be found a great help in examinations of the chest.

Messrs. Allen and Hanburys have kindly designed for me the pattern shown in the illustration.

LOUIS LOWENTHAL, M.D. Chicago,
M.R.C.S., L.R.C.P. Lond.

Hampstead, N.W.

THE LANCET.

LONDON: SATURDAY, JULY 27, 1918.

The Fifth Year of War.

ANOTHER year of universal war will have commenced before our next issue, and it is right and proper that the profession of medicine should pause at this fifth milestone and look back on what the healing art has accomplished during the embittered struggle, in order to balance up the successes and failures of our organisation in the past and to see in what direction things should be better ordered for the future. At the outbreak of war the medical profession was admittedly unprepared for a struggle of such magnitude and duration, but this unpreparedness was shared with every section of the population, military or civil. With one great difference. The medical man had the distinction from all other civilians that as he stood, whether with or without a uniform, he was a trained man for medical needs, and therefore was of superlative value to the Navy and the Army. There is, of course, a medicine of peace and a medicine of war, but the medicine of war is a medicine of peace developed to suit the various exigencies of the case. The position of the medical man as the trained man for medical purposes was recognised in an honourable if embarrassing manner upon the outbreak of war, for an immediate draft was made upon our body of such magnitude and quality that when later a vast British army began to take shape and the war extended from continent to continent the supply of our own medical men available was already much depleted. It is old history now that when those who had the conduct of the war in their direct charge lacked the necessary imagination and foresight with regard to medical affairs, the situation was met by the medical profession instituting their own deliberative war committees. The Central Medical War Committee and other similar bodies showed themselves prepared to investigate the supply of medical men remaining in the various localities, and to meet the medical demands made by the Services, while keeping a watchful eye upon the due maintenance of the public sanitary and education organisations. What the Central Medical War Committee did for England and Wales the Scottish Medical Service Emergency Committee did for Scotland, and their task of recruiting the officers for medical military purposes, without imperilling civilian needs, has now become recognised as part of the official machinery and is still being worked out. In England and Wales the magnitude of the populations concerned presented a problem of considerable difficulty, but substantial help has been given by the Committee of Reference of the English Royal Colleges. This Committee discriminates with regard to the conflicting claims on the honorary staffs of the great hospitals and institutions, and the work of this Committee is still proceeding in the direction of a fair and economical distribution of medical care in the metropolis. The medical profession may congratulate itself upon the continuous and hard work done by these three bodies. Through their activities the medical profession, while remaining a civilian body, has organised itself for military purposes, and has done so with a spirit of unanimity, though the conditions of their employment were often hard to justify.

The fifth year of war opens with happy omen. The prolongation of the struggle with its terrors and griefs tends to produce among all the participants a frame of mind on which the actual happenings produce an immediate effect. The recent successes of the armies of the Allies on the Western front, and the presence of large and effective American forces in France, have shaken the martial ardour of the Central Empires. The reported words of the German Kaiser and of his principal military subordinates show that in Germany as well as in Austria the war is being prosecuted with less confidence in the invincibility of the German armies than heretofore, and that some apprehension is dawning of the reasons why the rest of the civilised world regard German actions and German professions with suspicion and anxiety. But with all this there is nothing to suggest an abatement in the relentlessness of the fighting, and the medical responsibilities remain undiminished. It is the duty of the medical profession to keep the Army and Navy properly equipped with medical assistance during the prolonged struggle. It falls to them also to organise the proper treatment of the sick and wounded on their return, while looking far ahead to the possibility of restoring to useful and happy citizenship many thousands of unfortunate men who have been damaged in the prolonged contest. As the war goes on, while the actual number of men engaged in fighting at any one time may not become larger, the toll of sick and wounded rises, and it is on the ever-increasing task of dealing wisely and efficiently with these unfortunates that we now have to focus our particular attention. In an admirable article which we publish this week Major-General Sir ROBERT JONES describes, as medical director of military orthopædics, the way in which orthopædic treatment is now being organised throughout the country, and it will be observed that under this amorphous heading a large part of the urgent work of military surgery has come to be included. Similar organised endeavours to deal with the results of tuberculosis, of shell shock, of ophthalmic and of jaw injuries (to mention only a few of a long category) have been set in motion, and it remains for the medical profession to justify by their methods of dealing with these sad cases the eulogy which they have earned in other directions.

The field of work is so immense and so laborious that there is room at times for discouragement, or for a lowering of the standard to the dead level of mere routine. But one thing should ever be borne in mind, and it is a wonderfully heartening reflexion. Just as the medicine of peace became the medicine of war, so the medicine of war need

not be scrapped, but will become again the medicine of peace. No iota of the work done or genius expended need be wasted. When the swords have been beaten into reaping-hooks and the tanks are drawing ploughs the hygienic and surgical achievements of the present war will remain as the birthright of a new generation. We have already seen how the service of hospital ships on the Tigris, which ply past the gate of the Garden of Eden, will remain as the civilising means of intercourse in a new Mesopotamia, from which water-carried disease will have been excluded by the clean water installations now dotted along the river banks. We have also seen how the effective adaptation of simple means to ends in the hygiene of the battle-front may revolutionise the practice of sanitation in our rural areas at home. It is equally true that the war-time discovery of how to restore the mutilated face by the combined art of sculptor and surgeon will benefit the peaceful victims of lupus, rodent ulcer, and accidental burns. The solution of the problem of the tuberculous soldier, whether in colonies or by the aid of all that is implied in the term after-care, must help to solve the ever-present difficulty of dealing with consumption in our great cities on lines befitting the twentieth century. Intensive study and team-work developed under the stimulus of war conditions will remain to fertilise the medical practice of peace. Medicine has this vast consolation of a fruitful continuity.

Combating Louse-transmitted Diseases.

THE recent demonstration that *Pediculus humanus corporis* transmits trench fever[1] is leading to more active steps being taken to combat lousiness among soldiers, because even the most obstinate combatant officer appreciates the loss in man-power that may be induced. The knowledge of the discomfort and injury produced by lice, and that these insects convey relapsing fever, typhus, and various skin affections, and possibly plague, has not resulted hitherto in adequate measures being taken to mitigate the evil. The biology of lice is at last receiving the attention which it deserves, and with a real knowledge of their life-history we shall be in a much better position to devise effective measures against their attacks. This does not imply that the requisite measures can be carried out in practice immediately, but it does mean that future work against lice infestation will be better directed.

In the meantime there is much that might be done which is not done. To check the spread of disease by lice it is necessary to keep soldiers clean. That is not a new discovery, but it is knowledge that has hitherto been turned to little account. To keep men free from lice it is imperative that their clothing and persons should be periodically disinfested. Half measures in this respect are of little or no use; indeed, they are dangerous because they give a false sense of security. Although lice may be spread in a variety of ways, infestation occurs mainly through contact and close association with verminous persons. Therefore strict attention is required to keep clean persons apart from infested individuals. The latter may carry lice or nits on any article of their clothing and upon their body-hair. When disinfestation is limited to cleansing a man's shirt it is bound to fail as a preventive measure, for the shirt, replaced upon the man, is promptly reinfested by the lice that wander again upon it from the other untreated clothing; moreover, if all the clothing belonging to a man is disinfested and his body-hair is not rid of nits or stray lice, he will reinfest his clean clothing. These are no new discoveries, but, again, it is knowledge that has not been made use of. The apparel and person of the soldier require attention whenever the military circumstances permit. As a matter of routine, weekly inspection of men by competent examiners is imperative if lousiness is to be avoided. To be effective the plan of procedure and treatment should be systematised and rigidly carried out. For the destruction on a large scale of lice in clothing and blankets the only remedies that can be thoroughly recommended are dry or moist heat. Lice and their nits are destroyed by 65°–70° C. in one minute. A most effective method of applying dry heat is by the use of huts in which the articles are exposed to air heated by means of coke braziers (Orr's huts) or by stoves. Smaller huts may serve as steam chambers, steam being led into them from a suitable boiler. Railway vans, stationed at sidings, have been used as steam disinfectors in Germany, Serbia, and Egypt on an extensive scale. Colonel WILLIAM HUNTER, in a lecture before the Royal Society of Medicine, which we report elsewhere (p. 107), describes the successful application in the early days of the Near Eastern campaign of disinfestation by means of barrels and railway vans; the plan was devised by his colleague, Lieut.-Colonel G. H. STAMMERS. Underclothes and other suitable effects may be disinfested by dipping them in hot water or immersing them in such insecticide solutions as petroleum, cresol, or lysol, with or without the addition of soap. Sulphur dioxide is an untrustworthy agent here; as the gas is injurious to uniforms, while it is slow in action and unduly costly, its use should be discontinued where better means of louse destruction are available.

Other means of combating lice are merely palliative; they do not effect the complete destruction of vermin. This must not be taken as meaning that palliative measures are valueless, they serve to keep down the louse population and may have to be relied upon at certain seasons when the systematic procedure detailed above cannot be put in action. Chief among palliative measures at present employed may be reckoned the application at frequent intervals of insecticides to clothing. The use of insecticides is a confession that men are not being kept clean by direct means, and may sometimes mean that nothing worth doing is being done. The indiscriminate use of empirical

[1] See McNee and Renshaw (1916), Brit. Med. Jour., i., p. 225; Journ. R.A.M.C., xxvi., p. 490; Davies and Weldon (February, 1917), THE LANCET, i., p. 183; Strong and Others (March, 1918), Med. Bull. (American Red Cross Soc. in France), i., p. 376; Byam and Others (May, 1918), Trans. Soc. Trop. Med. and Hyg. (In press.) The last two publications are specially important in relation to trench fever.

remedies is strongly to be deprecated, for many of those advertised are entirely useless. It is important that medical and sanitary officers should receive instruction in the best methods of dealing with lousiness in troops, for the matter is by no means so simple as it may appear to the uninitiated. In this connexion we would refer those interested to the papers by Professor G. H. F. NUTTALL, where the subject is exhaustively treated and illustrated.[2] The National League for Health, Maternity, and Child Welfare has recently issued leaflets and posters dealing with the problem of vermin in general (flies, lice, bugs, fleas), with the object of spreading a knowledge of their misdeeds among the public. The movement is laudable, but we wish that the league had obtained its "best scientific information" from more competent sources before spreading its leaflets broadcast.

[2] See Parasitology, Cambridge, vol. ix., pp. 1-185, *Pediculus humanus*, its Biology and Relation to Disease, bibliography. Ibid., vol. x., pp. 375-405, *Phthirus pubis*, its Biology and Relation to Disease, pp. 411-586, combating lousiness among soldiers and civilians.

Annotations.

"Ne quid nimis."

THE SUPPLY OF MEDICAL STUDENTS.

WE have received from the General Medical Council the following tabular statement giving the number of students in actual attendance on courses of instruction in preparation for medical degrees or diplomas. The statement refers to the month of May of the present year.

Topical distribution.	First year. Due to qualify in 1923.			Second year. Due to qualify in 1922.			Third year. Due to qualify in 1921.			Fourth year. Due to qualify in 1920.			Fifth year. Due to qualify in 1919.		
	Men.	Women.	Total.	Men.	Women.	Total.	Men.	Women.	Total.	Men.	Women.	Total.	Men.	Women.	Total.
London District	285	202	487	211	137	348	167	150	317	195	66	261	389	53	442
England & Wales*	592	329	921	472	256	728	382	226	588	300	116	416	514	92	606
Scotland	393	222	615	329	259	588	319	185	504	231	129	36	315	103	418
Ireland	393	114	507	448	104	552	369	73	442	228	30	258	115	12	127
Total	1378	665	2043	1249	619	1868	1060	484	1534	759	275	1034	944	207	1151

* Including London.

The totals for the several areas in the order given are 1855, 3259, 2485, and 1886, with a grand total of 7630, of whom 5380 are men and 2250 are women. The high proportion of women students in the London area is noteworthy, especially in comparison with the Irish figures. It also appears from a subsequent part of the tabular statement not here reproduced that 671 of the men students are under 18 years of age and that 553 come from places outside the United Kingdom. It is instructive to compare the grand total of students in May, 1918, with the corresponding figures for the last two years.

Total Medical Students in Attendance.

May, 1916	6103	October, 1917 ...	7048
January, 1917 ...	6682	May, 1918	7630

This numerical comparison bears out Sir Donald MacAlister's statement at the recent session of the General Medical Council that the student registrations in 1917 exceeded those for any year since 1891. Although there is for the time being a "shortage of doctors," there is apparently no shortage of potential doctors.

THE CHOLERA SITUATION IN EUROPE.

FOR some time during the present year it has been known that cholera was appearing in certain parts of Russia, more especially in the city and district of Petrograd; at various places in the government of Podolia, in the west of Russia; at the town of Penza, in Middle Russia, 330 miles south-east of Moscow; at the port of Tsaritzin, on the Lower Volga, in the province of Saratoff; and at the port of Astrachan, also on the Lower Volga, 47 miles from its discharge into the Caspian Sea. In Asiatic Russia cholera was also prevalent in May of the present year at Tashkent, the capital of Russian Turkistan. With the coming of the summer season the cholera prevalence began to assume epidemic proportions in several places, particularly in Petrograd, which in past years has often been devastated by the disease. On July 13th the *Times* published a message, which had been transmitted through the wireless stations of the Russian Government, addressed "to all the Councils of the Corn Provinces and to all railway officials," to the effect that cholera was increasing in Petrograd, and that daily hundreds of persons were falling victims to the disease, the situation being greatly accentuated by the serious scarcity of food. Three days later another message stated that every day 500 cases of cholera were occurring in Petrograd, and that the infection was spreading to other parts of Russia and to Finland. About the same time information reached this country that cholera was epidemic in the city of Saratoff, on the Volga, 500 miles south-east of Moscow, and that "thousands" of persons had already been attacked by the disease. On July 12th a steamship from Petrograd arrived at Stockholm with six of its crew suffering from cholera, and a few days later another ship arrived at the Swedish port of Gefle, on the Gulf of Bothnia, with cholera on board. On July 17th yet another ship from Russia reached Christiania with five cases of cholera among its passengers. We understand that the Scandinavian Governments are on the alert and are making strenuous efforts to prevent cholera from gaining a foothold in their several countries, and that the Finnish-German Government also is making similar efforts. Experience of previous cholera epidemics has shown that England has generally received its infection by way of one of the northern or north-western ports of Europe. The war, for the time, has closed our trade with Baltic ports, and this, in a measure, has lessened the present danger of cholera importation into this country from that quarter. The fact that cholera has already been carried by ships from Russia into various parts of Scandinavia is not without significance. There are other Russian ports, such as Archangel and Murman, which are still in communication with England by shipping, and the possibility of the introduction of cholera into our country by this route cannot be disregarded. It has generally been considered that when cholera infection is imported into England in the autumn months the danger of its spreading is not so grave as when it is brought to us in June or July. Formerly, if the importation of the infection coincided with a hot summer there was grave risk of a serious epidemic. In recent years, however, owing to the greatly improved sanitary condition of the country, the danger that cholera might gain a footing on our shores has been much reduced. Simon's well-known observation that "excrement-sodden earth, excrement-reeking air, excrement-tainted water, these are for us the causes of cholera," no longer seems to apply. But it is

otherwise in Russia, and particularly in Petrograd, where the Bolshevists have swept away the municipal sanitary administration and the responsible officials, without whose assistance no city can hope to keep itself free of filth and filth diseases such as cholera: this remark is, no doubt, true as regards many other cities and districts in unhappy Russia at the present moment. For that and other reasons it is extremely probable that we shall hear more of the ravages of cholera in Russia in the next two or three months.

THE REINSTATEMENT OF DR. JOHN HENDERSON BELL.

THE decision of the General Medical Council was, as we pointed out at the time, equivalent to a reinstatement of Dr. J. H. Bell in the esteem of his colleagues and of a larger public. The miscarriage of justice of which he was a victim has already been to this extent made good. What he has suffered he has suffered, and although we can do nothing more to compensate him for his suffering, we can at least help to remove the pecuniary burden which still rests upon him. We feel sure that the appeal by four of Dr. Bell's most distinguished colleagues, which appears in our correspondence columns, will not fall on deaf ears, and we commend it to the notice of all our readers. No single one of us is secure, as the signatories remind us, from a similar mishap.

THE NEED FOR STATUTORY MEDICAL ADVISORY COMMITTEES.

IN an open letter to the medical profession Mr. Sidney Webb, who has been invited by the Labour Party to stand for Parliament, representing the University of London, gives his views on the proper relation of medicine to the State. He is convinced of the importance of the medical profession, as a whole, obtaining a genuinely effective influence on the administration of the service which it renders to the community. The ideal relationship between the various parts of the medical profession as well as that between the profession and the State will not, in his opinion, be discovered unless Parliament can be induced to provide for a much more effective and continuous intervention than at present exists of the mass of medical opinion and medical counsel—meaning predominantly that of the general practitioner—alike in national and in local administration. Mr. Webb goes on to say:—

> This will not be achieved merely by getting medical practitioners appointed as assistant secretaries or heads of departments, or even as Ministers of Health. I see not much advantage, and some considerable drawbacks, in making good doctors into not particularly good bureaucrats. There must, of course, be qualified medical men, clinical as well as sanitary, wielding real powers of administration in all health departments, central and local. But what I should like to see, in addition, is some provision for the continuous, authoritative, and responsible influence, on policy and on administration, of the medical profession itself. It seems to me that the Ministry of Health ought to be provided with a statutory advisory committee composed, not of the medical bureaucracy inside the office, nor yet of the nominees of the Royal Colleges, but of the duly chosen representatives of the profession outside the Government service; that this advisory committee ought to have no executive power (because we do not want it to become itself part of the bureaucracy), but unlimited freedom to criticise and advise; that it should be entitled to give its opinion, not merely on matters affecting the pecuniary interests of doctors or their status in the community, but on anything, done or undone, affecting health or disease; and that it should be free, whenever it thinks fit, to present an authoritative report to Parliament, uncensored by any department of the Government.

Mr. Webb suggests a similar advisory committee of the local medical profession, on a smaller scale, attached to every town and county council in the country, with analogous powers of reporting, uncensored by the town clerk or the health committee, upon the doings of the local sanitary authority. Dr. Basil W. Martin tells us that in Leicester, which has long been to the fore with its Public Medical Service, such an advisory committee representing the medical profession, local public bodies, and voluntary health organisations, was agreed to last week. The mayor is to be chairman and a member of the medical profession vice-chairman of this committee, which is to have no executive powers but will consider, in a purely advisory capacity, matters relating to the health of the town. Similar committees have for long had a beneficent influence in several Alpine health resorts. The example of Leicester will be watched with interest by less adventurous towns.

THE OCCURRENCE OF SPIROCHÆTA EURYGYRATA IN MAN.

DURING the past quarter of a century the study of protozoology has received more and more attention from medical men distributed in the four corners of the earth. The microscope has revealed a number of varieties of lower animal life which readily make of man a habitat and breeding ground under suitable climatic conditions. The spirochætes have a special predilection for various portions of the human mucous membranes. We have received an interesting paper by Temporary Surgeon G. Marshall Findlay, R.N., entitled "Observations on the Occurrence of *Spirochæta Eurygyrata* in Man," but space only allows of our giving his conclusions. In THE LANCET of March 3rd, 1917, Dr. J. W. Scott Macfie showed that this spirochæte is universally present in man on the Gold Coast, but its geographical distribution is almost unknown. For this reason Surgeon Marshall Findlay decided to examine the stools of British sailors and local natives in Egypt and the Red Sea littoral. His researches confirm those of Macfie, and indicate the almost universal parasitisation of man by this spirochæte in the equatorial zones of Africa. In Lower Egypt *S. eurygyrata* is present in the intestinal canal of man in a very considerable number of cases. In Upper Egypt it is universally present. In Europeans there appears to exist some correlation between the existence of pyorrhœa alveolaris and the occurrence of the spirochæte in the intestine. An impure culture of the spirochæte can be obtained by incubating in sterile hydrocele fluid at 37° C. It has long been suggested that a granular form exists in the life-history of certain spirochætes parasitic in man, and the present investigations indicate that *S. eurygyrata* is no exception to this rule. Dried fæces, three and a half months old, which revealed no spirochætes under the microscope, when incubated at 37° C. in sterile hydrocele fluid yielded a growth of active spirochætes. This spirochæte does not appear to be harmful to man, can be readily cultivated in the human organism (as also in monkeys) by oral administration of capsules containing the spirochæte, and is curable by the administration of thymol.

THE house and library of the Royal Society of Medicine will be closed for cleaning from Thursday, August 1st, to Saturday, August 31st, inclusive. During that time, however, medical officers of the naval, military, and air services, including the medical corps of the Dominions and our Allies, will be admitted to the library between 10.30 A.M. and 6.30 P.M.

MILITARY ORTHOPÆDIC TREATMENT.

AT the beginning of the fifth year of war the notion of "team work" as applied to war-time injuries and diseases is taking more definite form. And in no department of military medicine and surgery is this more evident than in the important, if vaguely defined, sphere of military orthopædics. A recent official pronouncement has included all of the following conditions in this sphere of influence:—

Derangement and disabilities of joints, including ankylosis. Deformities and disabilities of feet, such as hallux rigidus and valgus, hammer toes, metatarsalgia, painful heels, flat and claw feet. Malunited and ununited fractures. All fractures of the femur. Cases of nerve lesion requiring operative treatment. Cases requiring tendon transplantation or special surgical appliances.

These cases are now sent direct, as far as space permits, to one of the military orthopædic centres which have been established in each military command in Great Britain. There are three such centres in the Scottish Command and we give this week some account of two—at Aberdeen and Glasgow—as the result of a personal visit. To the third—the Edinburgh War Hospital at Bangour, Midlothian—an important addition has just been made in the form of a building for hydrotherapy, massage, and electrical treatment on a large scale. The gift of the Edinburgh Red Cross Committee, this was formally handed over at the end of last month by Lord Mackenzie to Lieutenant-Colonel John Keay, R.A.M.C., commanding the hospital.

The following address on the scope and aims of military orthopædic surgery was delivered by Major-General Sir Robert Jones at the recent Inter-Allied Conference on the After-care of Disabled Men, and deals with the whole extensive subject in an illuminating way.

MILITARY ORTHOPÆDIC SURGERY: ITS SCOPE AND AIMS.

BY SIR ROBERT JONES, C.B., CH.M., D.SC., F.R.C.S.,
MAJOR-GENERAL, A.M.S.; INSPECTOR OF MILITARY ORTHOPÆDICS.

I HAVE been requested to state briefly the way in which we deal in this country with the group of cases classified under "Military Orthopædics."

Nature of Cases: Departments of an Orthopædic Centre.

Both at home and in America the definition practically covers the surgery of the extremities. The Army Council Instruction includes under the term "orthopædic" ankylosis of joints, deformities and disabilities of the feet, malunited and ununited fractures, injuries to the peripheral nerves, and conditions requiring the transplantation of tendons. This represents a very large proportion of the injuries of war, so that constant effort is being made to increase our accommodation, which is at present inadequate. We opened our first orthopædic hospital in Liverpool in 1915 with 250 beds, and now we have centres scattered over Great Britain and Ireland with well over 25,000 beds.

In organising an orthopædic centre we decide to have every department represented, and that these departments should be so related that while they interdigitated they should not overlap. Our experience of uncontrolled special departments led us to conclude that they were lacking in a sense of proportion, and that cases were being bathed, massaged, or electrified which required fundamentally different treatment. Unless these special departments are guided by men with an orthopædic training they might as well not exist. In one institution which we visited we found several men being massaged who should have had their torn nerves sutured. Others being electrified required preliminary tenotomies, while the subjects of arthritis were undergoing harmful movements in Zander machines. Again, attempts were being made to break down old septic joints which required the gentlest care. From all the evidence it was clear that special departments should be controlled by well-trained surgeons, and remain in association with orthopædic centres.

An orthopædic staff will consist of neurologists, operating surgeons and their assistants, and the chiefs of departments. Consultations are encouraged and take place between the chiefs of the various sections, and the powers and limitations of each department are soon appreciated. The co-operation between the departments is of the most friendly character, and the chief of massage is in constant touch with the chiefs of electrotherapy and curative workshops.

The departments for treatment consist of: (*a*) Curative workshops; (*b*) gymnasium; (*c*) massage; (*d*) electrical treatment; (*e*) baths.

Therapeutic Value of Work: Active and Passive Movements.

Perhaps the most interesting development is the curative workshops. Obviously a very large proportion of the inmates of an orthopædic centre are of chronic type. Many of them have passed through various hospitals, and have undergone several operations. Their moral fibre has been weakened by prolonged strain, and they have lived a life of painful indolence for many months. To such men occupation is essential to their recovery, and the curative workshop has been to them a priceless therapeutic boon. For the initiation and organisation of these workshops the nation is deeply indebted to King Manuel, assisted by the princely generosity of the British Red Cross.

These shops have a double curative value—the psychological and the mechanical. As soon as a derelict finds himself once again a productive agent he becomes transfigured. Hope replaces despair, and we find this mental reaction soon produces its physical changes. The power to order a man to work is practically never exercised, for we obtain our ends more effectively by persuasion and example. Work is therefore very popular, and is, in addition, accompanied by rewards and privileges.

The mechanical therapy is of two kinds—direct and indirect. A man with a stiff foot which he is disinclined to use may be given a job to do with his hands. In the interest which the work inspires he forgets to nurse his foot, which almost unconsciously, and often very rapidly, becomes again mobile. A knee-joint which could not bear the continued strain of working a treadle will perhaps improve in function quickly while the patient, forgetful of his injury, is working with a saw. This is the indirect method of attack.

The direct is invoked when we give a man with a stiff shoulder paperhanging or whitewashing in order to loosen it, or screw-driving to pronate or supinate his arm, or a plane to mobilise his wrist.

The governing principle in regard to curative work is founded on the well-grounded belief that active movements are of infinitely greater value than passive movements. Active movements by exercise in one of its various forms have a direct curative effect upon the muscular structure. Passive movements are sometimes essential in order to stretch or flex a joint in preparation for active exercise, but in war injuries movements must be supervised by an experienced mind.

Work in the gymnasium is rendered attractive by games carefully devised for definite objects. If these games are competitive they often prove most helpful to the functional element so often grafted upon the organic. Although associated regional types of disability are grouped in classes, we depend mostly upon individual attention. A good instructor has a hundred eyes, can detect and watch men with special disability, and he always knows the danger of over-exercise.

Massage and electrotherapy are governed by well-considered surgical principles both in regard to the types of graduated contractions induced in order to simulate normal psychological action and the maintenance of uninterrupted relaxation in paresed muscles. We lay it down as a fundamental principle that muscles must not be massaged while they are under tension. In drop-wrist not for one moment is a patient allowed to palmar flex his wrist, it must be kept dorsi-flexed while either being massaged or while undergoing electric treatment.

In all centres we have artists and modellers, and careful pictorial records are kept of the various types of deformities.

Instruction in Military Orthopædic Surgery.

Shepherd's Bush Military Orthopædic Hospital, London, is typical of some 15 similar centres situated in large industrial centres over Great Britain and Ireland. Around each of these centres is grouped a series of auxiliary hospitals supervised by the parent staff.

It is desired to make these institutions educational in order to disseminate orthopædic knowledge among men who will have to deal with after-war problems. Intensive

instruction is being given at Shepherd's Bush, Liverpool, and Leeds, and in three months a well-trained young surgeon will have thoroughly grasped the fundamental principles.

We have been immensely indebted to the United States, who, as soon as they entered the war, sent over my friend Major Goldthwait and 23 extremely well-trained orthopædic surgeons. This was a delightful gift for the duration of the war. In addition to these, we have placed at our disposal 50 American surgeons of junior rank, who can both help us in our work and at the same time undergo a training.

Even yet—such has been the demand upon our young men—we have very few Britishers undergoing training. This is most unfortunate. A young surgeon would be so much more useful and adaptable at the front if he had undergone an intensive training in the surgery of the extremities for three months.

For educational purposes congresses are held twice a year, when the staffs from all the hospitals meet to discuss and relate experiences; while every three months visits are arranged between centres geographically convenient in order that they may link up in efficiency.

The Work of the Centres: Restoration of Patients.

The operative work done in these centres consists largely in rectifying the deformities of war—arthrodesis of joints in good functional positions when they are ankylosed in bad ones; bone-grafting and other reconstructive measures for bony deficiencies and non-union; lengthening of shortened limbs and readjustment of malunited fractures; the fixation of flail joints in good functional position; and tendon transplantation for various conditions.

We have included injuries of the peripheral nerves in our orthopædic list because they often require pre-operative, operative, and post-operative treatment, and they were the type of case which at the beginning of the war were found to be neglected owing to pressure on beds. Such cases are most carefully examined by neurologists, who work in close conjunction with the surgeon. In this way the nerve cases are under admirable control, and we endeavour more and more to segregate the cases requiring suturing under the care of those men who do the work best. A feature of the neurological work is the success which has attended tendon transplantation in irreparable damage to the musculo-spiral and posterior interosseous nerve.

Distinguished general surgeons overlook the work of each of the centres.

There has been a very natural anxiety on the part of the War Office at the prolonged retention of men at the orthopædic centres, but when the other side of the picture is presented and it is realised that over 70 per cent. of the cases are returned to military life it is evident that the patient care devoted to them is justified. The orthopædic hospital is the only link which makes it possible for the Pensions Ministry to make a useful citizen of a disabled soldier. The regret we must all feel is that so many of the deformities which we have to rectify might be avoided were surgeons more generally instructed in mechanical principles.

More recently—to expedite the process of cure, to diminish the time of hospital treatment, and to prevent the formation of these chronic disabilities—steps have been taken to bring suitable cases from overseas to the orthopædic hospitals. They are labelled "orthopædic" and taken in convoys direct to the centres. The stay in hospital is in this way much diminished, as the facilities and equipment are such as to ensure that the best thing shall be done and at once.

Suggestions as to Preventive Methods.

Another useful method of improving treatment is that of instructional propaganda. Command depôts are visited monthly by orthopædic surgeons, and the doubtful cases are discussed in groups. Instructions or suggestions are sent to the various hospitals all over the country dealing with preventive methods. The following suggestions, drawn up by the consultants, may be useful as an idea of what is being done.

(*a*) *Gunshot injuries through joints, followed by suppuration, generally result in ankylosis.*—The position of greatest usefulness in such conditions are:—

Shoulder.—The arm should be kept abducted to about 50°. The elbow should be slightly in front of coronal plane of body, so that when it is at right angles, and the forearm supinated, the palm of the hand is towards the face. The arm is placed in this position, while the scapula retains its normal position of rest. The humerus being fixed to scapula at angle indicated, the arm can be lifted to a considerable height by scapular action.

The arm should not be kept more abducted than 50°, otherwise it may not be possible to bring it down to the side.

Under no circumstances should the joint be allowed to ankylose while the arm lies hanging down, for the functional result will be so bad as to necessitate an osteotomy later on to correct the adduction.

Elbow.—The position must always be influenced by the patient's calling, but in the majority of cases the best functional results are obtained when angle between humerus and forearm is a little greater than a right angle—about 110°. The forearm should be supinated so that that palm is directed slightly upwards. If both elbows are ankylosed one should be about 110° and the other 70°.

Wrist.—All injuries of wrist-joint should be treated with wrist slightly dorsi-flexed, with fingers spread well out (see paragraph (*e*) later). There should be no exception to this rule.

Hip-joint.—Ankylosis should be secured in position of slight abduction, the thigh extended and slightly rotated outwards.

Knee.—It should be fully extended, care being taken to avoid hyper-extension.

Ankle.—The foot should be kept at right angles to the leg, in a very slight varus position. A valgoid position of foot is to be specially avoided.

(*b*) *Gunshot injuries of joints followed by rapid healing.*—During the period of rest these joints should be kept in the same position as indicated above.

If there is no considerable damage to joint surfaces movement may be expected in many of these cases if ample time is given for recovery from inflammatory change. Any attempt at breaking-down under an anæsthetic is to be deprecated. Such joints require very careful handling.

The shoulder will serve as an instance. Without removing the shoulder abduction splints the joint should be well massaged for a few days. If there is no reaction it is safe to remove the arm a few degrees from the splint and let it down again. If this is not followed by reaction it may be repeated every day and the patient encouraged to lift it actively from the splint. When he can do this easily the splint can be bent a few degrees (adducted), so that further movements can be practised. Massage and electric stimulation of the deltoid are indicated. The principle is one of alternative attack and rest. If reaction occurs a further rest of the joint is needed.

A similar principle applies in injuries of other joints.

(*c*) *Injuries involving tissues in neighbourhood of joints, resulting in suppuration, deep scarring, &c.*—No attempt should be made to break down these cases under an anæsthetic.

The knee-joint will serve as an example. When by massage and other tests there is reason to expect no inflammatory reaction graduated movement may be attempted. The knee is straight, with, say, 10° of movement; a splint is moulded allowing the joint to flex to 25°. The limb is bandaged to the splint. When the joint has yielded, so that limb lies easily on splint, it should remain in that position for recovery of strained tissues to occur. Movements are then practised by patient within range of 25°. If voluntary movement is free within that range a greater angle is given to the splint and treatment is repeated. If the joint becomes tender and stiffens in the new position it must be placed back in straight position and rested. When movement has been secured to about 45° movements may be continued in the gymnasium.

In all extra-articular lesions of the axilla and its folds, where ankylosis of the joint is not expected, the arm should be placed in the fully abducted position.

(*d*) *Injuries occurring at distance from joints, fractures, &c., with inflammatory changes occurring in muscles.*—No joint, not the seat of an arthritis, should ever be allowed to stiffen permanently.

In all fracture cases where it is possible to move the joint without interfering with the fixation of the fragments this movement should be practised. One gentle movement in each direction once in two days is sufficient. Passive movements which involve frequent repetition of the same movement are unnecessary and often harmful.

If the joint is very stiff after prolonged immobilisation, and where the bone is supposed to have united, great care is required. The bones above and below the joint should be well splinted while movement is started if necessary under full anæsthesia. Unless the joint yields readily the surgeon should be content with a few degrees of movement, the joint should be secured for a few days, and the surgeon may renew his efforts from time to time. Bones are soft for many months after a gunshot injury, and many fractures have occurred again as the result of attempting to move the joint without first protecting the bone from strain. This is especially true of fractures above the knee and near the shoulder-joint.

(*e*) *Stiff fingers.*—All splints for dorsi-flexion of the wrist, especially where fractures or inflammatory changes have occurred in metacarpals and phalanges, should be moulded in the position the hand takes when holding a cricket-ball.

Particular care should be taken not to over-extend the metacarpophalangeal range, as stiffening in this position is most intractable. The palmar arch should be maintained concave, the short dorsi-flexion splint should leave ample room for movement in the metacarpophalangeal range, and should be moulded to allow of abduction of thumb. At earliest possible moment active movements should be encouraged, and massage and passive movements should be gently practised. The so-called breaking-down the fingers followed by swelling from effusion retards recovery. The movements should be very gentle to be effective.

General remarks.—In all cases where the injury does not directly involve the joint, massage and active movements should be encouraged.

Even when a joint has to be fixed in consequence of a fracture in the neighbourhood early massage and electric stimulation is needed in order to prevent adhesions forming in the muscle sheaths. The patient should also be taught how to contract his muscles while the limb is splinted.

Splints should not be applied to the fingers except where they are the actual seat of fracture or active inflammation.

In all fractures of the forearm the hand should be supinated.

All splints should be removed from the upper extremity at the earliest practicable moment. As bones take a very long time to harden, the lower limbs, inasmuch as they have to bear the body-weight, should be guarded against deformity during walking. Neglect of this precaution has given rise to many cases of bowing and overlapping of the femora.

All gunshot injuries of the joints have to be treated with great gentleness, and the breaking-down of such cases under an anæsthetic is to be generally avoided. Our pre-war experiences are not applicable to gunshot injuries.

All scars about joints should be kept extended during healing unless a contra-indication exists. Care should be taken to prevent equinus at the ankle taking place during the treatment of other lesions of the limb.

As patients have to be discharged while still under treatment, it is imperative that full instructions should be given to the local Pensions Committee as to further treatment.

These instructions give the various surgeons, many of whom have not had an orthopædic training, fundamental principles upon which they can act.

Artificial Limbs.

All the artificial limbs in the country were made first of all at Roehampton House in London. This hospital, though not included in the orthopædic scheme, is staffed by orthopædic surgeons. It was soon found necessary to decentralise, and limbless hospitals were started in Scotland, two in Ireland, and one in Wales. Quite recently it has been decided to start fresh centres in direct connexion with the orthopædic centres at Liverpool, Leeds, Manchester, and Birmingham. Three of these have already started work. They are under the joint control of the War Office and the Pensions Ministry. The patient remains in the Army until his limb is fitted.

But the curative workshops can be utilised in an invaluable way by the facility with which they can turn out *provisional limbs* of a cheap but effective pattern, by means of which the soldier can be provided with a method of locomotion as soon as he can bear his weight on the stump. He can very soon discard his crutches and move about with a stick.

A further boon has been conceded. He can go to his home on furlough with this provisional limb until such time as he is required to enter the "limbless" hospital for the adjustment of the permanent artificial leg.

Treatment and Training of Pensioners.

Such are the means adopted to restore function and render the patient fit to return to the Army or to go back to civil life. If sufficiently restored, the patient may go to a Command Depôt for further training, or be remitted direct to his unit and become again a serving soldier.

If he is so disabled as to be unfit for further service he is discharged from the Army and becomes a pensioner, coming under the supervision of the Pensions Ministry. The discharged soldier, now a pensioner, may be able to go back to his old trade, or he may find a new job in which he may be employed without further training; or he may be re-educated for another trade or craft. Arrangements are being made by means of classes in the technical schools, through private employers, or by the establishment of new institutions, in which he can get both training and treatment.

Many of the orthopædic pensioners require very prolonged treatment, necessitating close observation for a considerable time, combined with massage and electrical treatment, &c. For this purpose numerous out-patient clinics are required and set up. One paramount consideration should be kept steadily in view by the Ministry of Pensions in this connexion. Any provision for the treatment of the orthopædic pensioner must be made so as to allow supervision, control, and inspection by adequately trained surgeons. Continuity of treatment is lost otherwise, and the patient, careful work of months may be undone.

Organisation.—The complete organisation in relation to the treatment and training of the pensioner should include: 1. An out-patient clinic, with massage and electrical installation. 2. Beds for in-patients. Both these to be inspected and supervised by specially trained surgeons. 3. Hostels. 4. Means of re-education.

Military orthopædic centres exist now in all the commands.

In the Scottish Command there are three—at Aberdeen, Glasgow, and Edinburgh. At all three, and at Dundee as well, arrangements have been, or are being, made for the correlated treatment and training of the pensioner.

In the Irish Command there are two orthopædic centres—Belfast and Dublin.

In Wales the Welsh Metropolitan War Hospital, Whitchurch, near Cardiff, is the main orthopædic centre. A second one is in the process of being established at Newport, Mon. Arrangements are now being made at Cardiff to coördinate the treatment of the orthopædic pensioner with the military orthopædic centre at Whitchurch.

In England there are two orthopædic centres in the Northern Command—at Newcastle-on-Tyne and at Leeds. In both the pensioner is to be dealt with by association with the organisation of the military centres.

In the Western Command (in which Wales is included) there are in addition centres at Liverpool and Manchester.

In the Eastern Command a military orthopædic centre is being organised at the military hospital at Edmonton.

In the Southern Command centres exist at Birmingham, Netley, Oxford, Reading, and Bristol; and in the London area there are Shepherd's Bush and Tooting Military Orthopædic Hospitals.

For the orthopædic pensioner it is necessary that all schemes of treatment shall be closely allied to these military orthopædic hospitals, so as to be able to take advantage of the special equipment and departments which are found there. The pensions beds must be either at, or closely proximate to, the orthopædic centre, as it is impossible to reduplicate staffs.

Many more subordinate clinics are needed, however, in towns where recognised orthopædic centres do not exist. Such institutions should be affiliated to the nearest orthopædic centres in the several commands. As each command possesses at least one military orthopædic hospital, these subordinate clinics should be set up by the Ministry of Pensions after consultation with the War Office, and be periodically inspected by skilled orthopædic surgeons.

Such arrangements must be made if continuity of treatment is to be maintained and the pensioner is to be restored to health. The staffs for the pensioners' clinics should undergo an intensive training at an orthopædic centre.

Conclusion.

Such are the scope and aims of military orthopædic surgery. Arising out of principles adopted for the treatment of crippled children, it has expanded into a huge organisation of extreme military importance—first, with the object of receiving the serving soldier and sending him back to the fighting line; and secondly, to reconstruct and restore the functions of those so badly crippled as to be useless as fighting units, but who, if properly treated, may take their places as useful workers and efficient members of organised society.

The name "orthopædic" may be open to criticism as applied to war surgery, but it is not easily replaced. It is intended to cover a type of case which requires for its treatment a combination of specially equipped hospitals manned by well-trained operative surgeons of mechanical mind who will work in team and accord with heads of special departments. They must be loyally prepared to develop the work they are most fitted for to the complete exclusion of any other branch for which they have a liking, and they must all combine in an effort to make the institution they work in an abode of inspiration and contentment for the wounded. We have the teaching staffs represented in all these centres, but the more so-called general surgeons we can rope in the more effective will we become.

ORTHOPÆDIC CENTRES IN SCOTLAND FOR THE

THE ORTHOPÆDIC DEPARTMENT AT THE 1ST SCOTTISH GENERAL HOSPITAL, ABERDEEN.

1. Gardener patients at work in the grounds.

2. The splint shop.

3. The shoe-making shop.

4. Making trawl nets or nets for Sinclair fracture beds.

I. 1ST SCOTTISH GENERAL HOSPITAL, ABERDEEN.

THE special hospital block at Oldmill, of which Lieutenant-Colonel J. Smart, R.A.M.C., has kindly supplied us details, forms the nucleus of the orthopædic department for which 500 beds are set apart. Two large wards have been equipped with the necessary appliances for electrical and massage treatment. Five wooden huts, erected some three years ago for accommodation of hospital orderlies and now no longer required, have been fitted up as curative workshops, where at present is being carried on: Carpenter-work, boot-repairing, net-making, splint-making, wood-carving, leather-work, photography, and other handicrafts. A new hut ward for 50 patients, with nurses' room attached, has been erected on the east side of the special hospital, at a cost of about £800, at the expense of the Red Cross. The ward, connected by corridors with the main building, is electrically lighted and heated by a low-pressure hot-water installation. The orthopædic section is under the supervision and direction of Professor J. Marnoch.

Plans have been prepared and approved, and tenders obtained, for the erection of a large new block to the north of, and in direct communication with, the special hospital buildings, to be used for orthopædic bath treatment, with large gymnasium attached. It is proposed to erect also four additional huts as workshops adjoining the hospital. The estimated cost of the extension, £6000, is to be provided by the Scottish Branch of the British Red Cross Society.

An *electro-therapeutic department*, under the charge of Major J. R. Levack, R.A.M.C., has been installed in one of the wards of the special hospital which has been given over to orthopædic surgery. The apparatus used has been provided by the Red Cross and consists of galvanic switchboards and special faradic coils with metronome interruptors. Earthenware tubs for use as baths are used with both of these. A high-frequency apparatus is in constant use, particularly as modified for diathermy. Some of the faradic coils are supplied from small accumulators, while the remaining apparatus is supplied from the main current, either directly or by means of a transformer.

The methods of treatment include graduated faradic contractions, interrupted and continuous galvanism, ionisation, diathermy, high frequency, muscle testing. Many types of cases are treated, including peripheral nerve injuries and muscle wasting; functional cases—e.g., total paralysis of one limb, spasmodic closure of hand and permanently open hand, functional foot-drop, spasmodic inversion of foot. Electrical treatment also proves of benefit in the case of stiff joints, adherent scars and in cases requiring re-education of muscles, in trench feet and allied disorders.

Massage department.—Massage and carefully supervised exercises form an important item in the treatment of many orthopædic cases. The massage department occupies a ward similar to that of the electro-therapeutic department. It is provided with massage beds and apparatus designed for carrying out different beneficial exercises. There are also a number of electrical hand vibrators.

Some idea of the extent of the work may be gained from a summary of the number of treatments given over a period of three months (December, 1917, January, February, 1918):—

—	Massage.	Electrical.	Radiant heat.
Dec., 1917, 4 weeks	1818	1124	164
Jan., 1918, 5 ,, ...	2798	1585	271
Feb., ,, 4 ,, ...	2404	1419	145
—	7020	4128	580

In the *plaster department* four different classes of work are performed: (1) Fixation of limbs in plaster; (2) plaster records of limb before, during, and at conclusion of treatment; (3) casts for splints; (4) plaster splints.

TREATMENT OF DISABLED SOLDIERS AND SAILORS.

THE MANUAL CURATIVE WORKSHOPS AT THE SCOTTISH NATIONAL RED CROSS HOSPITAL, BELLAHOUSTON.

1. General view. 2. The splint shop.

3. The art metal shop. 4. Wood-carving shop.

II. THE SCOTTISH NATIONAL RED CROSS HOSPITAL, BELLAHOUSTON.

The Scottish National Red Cross Hospital at Bellahouston, Glasgow, of which Lieutenant-Colonel H. Chaffer, R.A.M.C., is in command, contains 1140 beds, of which 500 are reserved for orthopædic cases. Of these, 30 beds are allotted to orthopædic cases from overseas and 50 to pensioners. The orthopædic centre is under the direction and supervision of Prof. R. Kennedy, assisted by Capt. A. H. Edwards, R.A.M.C., Mr. W. Laird, Capt. G. Miller, R.A.M.C., and Lieut. Wynn, M.R.C., U.S.A., in the electrical and massage department. The centre includes an orthopædic building for baths, electricity, massage, and radiant heat, with an orthopædic operating theatre adjoining, and a special block of manual curative workshops, of which we give a series of illustrations.

These workshops provide facilities for such handicrafts as metal-work, fretwork, boot- and shoe-making, tailoring, joinering, cabinet-making, wood-carving, leather-work, art needle-work, and splint-making, and include a paint-shop and blacksmiths' shop. Exercise is prescribed by the surgeon in charge of the case, who follows the man to the workshops and watches his course of treatment there. By a happy fortuity the commanding officer of the hospital is also a trained engineer.

The *plan of treatment* is described by Sir George Beatson in an illustrated pamphlet issued by the Scottish Branch of the British Red Cross Society (86, St. Vincent-street, Glasgow). The physical remedies used in connexion with these cases may be grouped under the headings: (1) Hydrotherapy, in the form of the various baths; (2) mechanotherapy, in the form of massage, movement, physical exercises, and manual curative workshops; (3) electrotherapy, with electricity in its various modifications; (4) radiotherapy, with its hot-air and radiation baths.

Hydrotherapy is carried out mainly by the use of baths, general or local, and sedative or tonic in their action. The pool bath is circular and can be partaken of by 10 to 12 patients at a time; the water is at a moderately high temperature with a gentle motion, and immersion in it has a soothing and calming effect. Local sedative baths are represented by different shaped arm and leg baths. Both pool and other baths may be converted into tonic baths by employing water at a high temperature and in rapid motion by turbine action. The whirlpool bath prepares disabled parts for massage and for movements of the joints and muscles by manipulation.

Mechanotherapy is carried out first of all by massage, which may be manual, where the various manipulations are carried out by the hands of masseurs or masseuses, or it may be mechanical, where the effects are produced by mechanical apparatus of the Zander or other type, driven by hand or electricity. Movements and physical exercises are used in connexion with preserving, restoring, or improving the functions of joints. They strengthen the activity of muscles, and indirectly have an effect on the general health.

Electrotherapy is represented by the various forms of electricity—viz., galvanic, faradic, sinusoidal, and high-frequency—administered through different electrical appliances for the purpose of furthering local nutrition and stimulating nerves. For radiotherapy hot-air and radiation baths have been fitted up, the heat being furnished by electric lamps of varying colour, from which high temperatures can be obtained without damage to the tissues.

The manual curative workshops are not primarily intended for the occupational re-education of the wounded man, but have the object of hastening improvement and getting rid of the disablement following wounds, thus rendering the men better able for everyday work in life. At the same time no doubt the workshops help to bring out the aptitude of men for any special trade, and thus have a value in deciding the question of re-education.

THE CANADIAN MEDICAL WEEK IN HAMILTON, ONTARIO.

(FROM A SPECIAL CORRESPONDENT.)

THE combined meeting of the Ontario Medical Association, the Canadian Medical Association, the Canadian Public Health Association, the Ontario Health Officers' Association, and the Canadian Association for the Prevention of Tuberculosis, which was held in Hamilton, Ontario, from May 27th to June 1st, proved to be the largest medical gathering which has ever taken place in Canada. About 4000 medical practitioners registered their names. With slight exception all the meetings were held in the Royal Connaught Hotel, Hamilton. The Congress was opened on the morning of May 27th by the Duke of DEVONSHIRE, Governor-General of Canada. The first meeting was devoted to public health matters.

Venereal Disease.—Child Welfare.—Tuberculosis.

Lieutenant-Colonel J. W. S. MCCULLOUGH, head of the Ontario Board of Health, dealt with the control of venereal disease in relation to the drastic Act passed recently by the Legislature of Ontario.

A Child-Welfare Session was held, to which Dr. GRACE L. MEIGS, of Washington, D.C., contributed a paper dealing with the year's campaign inaugurated in the United States by the Children's Bureau in Coöperation with National, State, and Local Child-Welfare Committees of the Council of National Defence, with the object of saving the lives of 100,000 children.

The eighteenth annual meeting of the Canadian Association for the Prevention of Tuberculosis took place on May 29th. The report of Capt. G. D. PORTER, the secretary, discussed the social and public aspects of tuberculosis.

Capt. H. W. HILL, medical officer of health for London, Ontario, drew attention to the need of differentiating between the human and bovine forms of tuberculosis, advocating efficient pasteurisation of milk to exclude bovine tuberculosis. Open cases of tuberculosis were rare in children, and should not be allowed to commingle with each other or with closed cases. He did not accept the view that tuberculosis was almost invariably contracted in childhood, but thought that a large number of cases arose after the age of 16.

Problems of the Returned Soldier.

At the suggestion of Surgeon-General FOTHERINGHAM a symposium was held on some of the problems of the returned soldier. Four papers were read. The first, by Lieut.-Colonel COLIN RUSSELL, C.A.M.C., described psychogenetic conditions and their treatment. Their etiology was explained as the result of the conflict between the natural inherent instincts and the more lately acquired control of these instincts by the higher centres. Deficient control, either congenital (as in mental deficiency) or lack of proper training, as well as the natural exhaustion of the acquired control of the higher centres under prolonged strain, were held responsible. The defeat of the higher centres and the abolition of the critical activities rendered the patient open to suggestions that met the wishes of the conquering instinct. Stress was laid on the fact that shell shock cases practically disappeared from the French Army when the rule was made that soldiers suffering from it would not receive a pension. Colonel Russell advocated the establishment in Canada of special hospitals to deal with these cases.

Colonel J. H. CAMERON, of Toronto, gave an address on Orthopædics, with special reference to the history of this branch of surgery. He took occasion to criticise sharply the sentimental mollycoddling of the returned soldiers indulged in by well-meaning people.

Lieutenant-Colonel HADLEY WILLIAMS, C.A.M.C., read a paper on the surgical treatment of nerve injury, and Lieutenant-Colonel ROBERT WILSON discussed the place of physiotherapy in the treatment of the invalid soldier.

Prevention of War Neuroses.

In the Section of Medicine an interesting paper on the prevention of war neuroses was presented by Dr. THADDEUS H. AMES of New York, based on his personal experience at Montreal and Toronto, of soldiers suffering from shell shock, and on that of other medical men from the battle lines. Shell shock was, he held, preventable, proof being found in the fact that in some regiments the condition was unknown. Discipline alone did not suffice to prevent it; successful prevention largely rested with the junior and non-commissioned officers, who came into close contact with the rank and file, and were able to talk familiarly with the men. When a change in behaviour was noticed the officer should distract the man's mind by all means in his power. A sharp reprimand would sometimes bring about the desired reaction. Everything depended upon the officer, the object aimed at being to induce the man to unburden himself. The soldier continually in peril of his life was peculiarly open to suggestion. In war the primitive emotions were unleashed. Training was of great value in restraining these emotions, and especially that of fear. Soldiers should be taught that discipline was for the good of the State and that fear was a healthy reaction in face of danger and admitted by all except the insane man and the liar. In view of their powers of prevention if they chose to exert them, Dr. Ames went so far as to state that officers were responsible for neuroses in regiments.

Broncho-Pneumonia in Army Camps.

An important paper on the virulent type of pneumonia observed in Army camps was read by Dr. W. G. MACCALLUM, of Johns Hopkins University, Baltimore. This disease seemed likely to be the cause of a large amount of sickness and death. While numerous cases of lobar pneumonia had occurred, the most noteworthy was a type of broncho-pneumonia due to infection with a hæmolytic streptococcus. This was studied first at San Antonio, Texas, and more recently at Camp Dodge, Iowa, where an outbreak occurred among the coloured troops, spreading later to the white troops in an adjacent camp. Like the outbreak of pneumonia at the camp Zachary Taylor, described by Dr. L. H. Mayers and Dr. W. W. Hamburger in THE LANCET, it frequently gave rise to empyema, was extremely deadly, and spread with great rapidity. Streptococcal pneumonia appeared to arise spontaneously, although in some cases cold or scarlatina was an antecedent, and more frequently measles, which was very prevalent in the camps at the time. The prominent symptoms were sore-throat, swelling of the larynx, and alteration of the voice owing to deep ulceration of the vocal cords. The fluid which collected in the pleural cavity was slightly turbid, at first straw coloured, becoming later brown, and then purulent and thick. Relief was afforded by aspiration or by resection of ribs, followed by washing out with Dakin's fluid. Post mortem the lungs were found distended with air and containing hard peri-bronchial nodules as large as peas, resembling miliary tubercles. Aspiration was often difficult owing to the presence of adhesions. After evacuation of fluid thickening of the framework of the lungs often took place. The picture was one of interstitial broncho-pneumonia, the bronchial area being filled with polynuclear cells. Infection appeared to be conveyed by personal contact or mouth spray, and increased when men were huddled together in barracks. Disinfection had no effect in staying the spread of the disease, and Dr. MacCallum thought that in vaccination lay the chief hope of checking it.

Delivery of Addresses.

The Address in Medicine was given by Dr. LEWELLYS F BARKER, of Johns Hopkins University, who discussed the significance of heart murmurs found in the examination of candidates for military service. Dr. Barker pointed out that by improved methods and standardisation a large proportion of these rejected men might be rendered fit for whole or part service. Murmurs produced outside the heart had no effect upon the man's capacity for military service.

Dr. ISAAC A. ABT, of Chicago, gave the Address in Pediatrics on asthma in childhood. Dr. JOSEPH D. LEE, of Chicago, gave the Address in Obstetrics, discussing methods and operations for reducing fœtal mortality, with special reference to the newer methods of Cæsarean section.

The Address in Surgery was given by Dr. CHAS. H. MAYO, of Rochester, Minn., and was devoted to a consideration of cancer.

The meeting was a conspicuous success throughout, and a word of praise is due to its organisers, and especially to the energetic secretary of the General Committee of Arrangements, Dr. J. H. Mullin, of Hamilton.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

SUBSCRIPTIONS TO THE SECOND APPEAL.

THE following subscriptions and donations to the Fund have been received during the week ending July 22nd:—

	£	s.	d.
Dr. Bernard Spilsbury...	5	5	0
Dr. H. D. Kirby	1	1	0
Miss Everina S. I. Massy, M.B.	1	1	0
Mr. A. P. McCallum, M.P.S.	5	0	0
Dr. A. A. Parson	1	1	0
Mr. T. Baker, M.P.S. ...	1	0	0
Mr. S. Summers	0	2	6
Mr. W. S. Howorth, M.P.S.	0	5	0
Dr. J. Crisp Griffiths ...	2	2	0
Messrs. James Beard, Ltd.	3	0	0
Dr. R. Kershaw	2	2	0
Dr. Heywood Smith ...	1	1	0
Dr. J. T. Churchill ...	2	0	0
Dr. W. J. Stephens ...	0	10	6
Dr. T. H. Galbraith ...	5	5	0
*Sir James O. Affleck ...	10	10	0
Lt.-Col. R. D. Hotchkiss, R.A.M.C.	1	1	0
Dr. C. R. Marshall... ...	1	1	0
Capt. T. T. Apsimon ...	1	1	0
Mr. J. A. Buckley	2	2	0
Dr. W. Snodgrass... ...	3	3	0
Capt. R. M. Barwick, R.A.M.C.	10	10	0
Dr. W. B. Russell	1	1	0
Major R. Stirling, R.A.M.C. (T.)	3	3	0
Dr. T. G. Stonham ...	1	1	0
Fleet-Surg. C. C. Macmillan	1	1	0
Dr. & Mrs. J. F. Blackett	1	1	0
†"A Friend"	100	0	0
Staff Surg. B. S. Robson	5	0	0
M. C.	5	0	0
Dr. B.	10	0	0
Sir Rickman J. Godlee	4	4	0
Capt. F. A. Hampton, R.A.M.C.	5	0	0
Dr. G. Peterkin	2	2	0
Mr. H. B. Morgan, M.P.S.	0	10	0
Dr. T. Fawsitt...	5	5	0
Dr. R. Kay	2	2	0
Mr. C. J. Heath	5	5	0
Capt. and Mrs. J. Rutter Williamson	5	5	0
"Returned Red Cross Salary"	4	4	0
Dr. M. A. Teale	1	1	0
Stourbridge Medical Society	3	3	0
Dr. G. I. Dudley	1	1	0
Dr. J. Fawcett	5	5	0
Dr. J. P. Purvis	2	2	0
Mr. A. H. Bell	1	1	0
Dr. C. Riviere...	2	2	0
Dr. F. Gourlay	1	0	0

* Per Sir Rickman Godlee. † Per Dr. Herbert Spencer.

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham Gate, London, S.W. 1, and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Limited.

DIETETICS.

Special Rations for Invalids.

THE position of invalids has been greatly improved under the national rationing system which came into force on July 14th owing to the further powers of issuing extra rations in suitable cases now granted to Food Control Committees. These include power to deal with an extended list of diseases for which extra rations of meat, butter or margarine may be required, and to make grants of sugar or of white flour for a limited time. Application is now always to be made to the Committee of the district in which the applicant lives, and not directly to the Ministry of Food. The extra rations, or white flour, when granted, can only be purchased by means of authorities issued by Food Control Committees, and may not be supplied by retailers on doctors' certificates without such authorities. Except in the case of white flour or of extra rations for expectant and nursing mothers application is to be made on Form N. 36, copies of which may be obtained from food offices. This form includes a certificate to be signed by the doctor in charge of the case, stating the disease from which the patient is suffering and specifying the minimum weekly amounts of the food in question required by the patient. In the case of an application on the ground of tuberculosis the Food Control Committee may inspect the official register of notifications.

Meat, Butter, and Margarine.—In the case of adults the following diseases have been granted special consideration, the quantities given being the maximum weekly quantities, inclusive of the ordinary ration, which can be allowed in any case:—

1. Active tuberculosis,[1] pulmonary or otherwise. Meat,[2] 2½ lb.; bacon, 1 lb.; butter,[3] 3 rations.[4]

2. Diabetes and glycosuria: Meat, 2½ lb.; bacon, 1 lb.; butter, 4 rations.

3. Exophthalmic goitre: *Either* meat, 2 lb.; bacon, 1 ration; and butter, 1 ration; *or* meat, 1 ration; bacon, 1 ration; and butter, 2 rations.

4. Pernicious anæmia: Meat, 2 lb.; bacon, 1 ration; butter, 1 ration.

5. Cancer[5]: *Either* meat, 2 lb.; bacon, 1 ration; and butter, 2 rations; *or* meat, 1 ration; bacon, 1 ration; and butter, 3 rations.

6. Senile dyspepsia: Meat, 2 lb.; bacon, 1 ration; butter, 1 ration.

7. Convalescence after severe illness, severe operation, or serious loss of blood (including childbirth in which the child does not survive): Meat, 2 lb.; bacon, 1 ration; butter, 2 rations.

(In the case of 7, the grant is for 4 weeks; in the case of 6, for an indefinite period; in the case of 1-5, for an indefinite period, subject to renewal every 4 weeks.)

In no case can extra meat be sanctioned for the purpose of obtaining beef-tea, applicants being advised to use meat extract with or without the addition of milk powder.

Where a patient not falling into any of the groups mentioned cannot take one of the rationed foods an interchange may be granted on the following basis, viz.: 1 meat coupon a week = 1 bacon coupon a week = 1 butter coupon a month. In the case of children under 2 years suffering from diarrhœa and wasting or marasmus, extra meat, not exceeding 2 lb. weekly, may be granted for making raw beef-juice, but only for a maximum of 4 weeks.

White Flour.—No ordinary disease is held to require bread made from white flour. Application for a grant is made to the Local Food Office on a special form not used for any other food, for a period of six weeks and for not more than 14 lb. in all, and may be granted in cases of active gastric or duodenal ulcer, where the patient is confined to bed or only newly convalescent, in cases of gastric carcinoma or senile dyspepsia, chronic diarrhœa, or intestinal ulceration. The term "senile dyspepsia" is used to describe the form of flatulent indigestion often associated in the aged with chronic bronchitis or cardiac weakness. In the case of gastric carcinoma or senile dyspepsia renewal may be granted by Committees without fresh medical certificates. All other applications for renewal must be made to the Invalids' Flour Subsection at the Ministry of Food. The medical certificate in regard to white flour is a searching document, stating in each case whether the patient has recently tried the regulation grade flour, and if so with what effect, whether the present bread has been found unsuitable, even when thoroughly toasted, and whether the certifier is satisfied that the supply of flour of lower percentage extraction is essential.

Sugar.—Extra rations may be granted for a period not exceeding four weeks where a patient is medically certified to be unable to take solid food on account of difficulty in swallowing or because his disease necessitates a slop diet. No grant of extra sugar may be made to anyone receiving an invalid's ration of meat, butter or margarine. The total sugar granted, including the ordinary ration, must not exceed 1 lb. per week, except in the case of a patient requiring to be fed by a tube. The concession is not intended to apply to artificially fed infants or to healthy children. The renewal of a grant has to receive confirmation by the Special Diseases Subsection of the Ministry of Food.

Milk.—It is desirable to recommend milk rather than extra allowances of meat or butter wherever this will meet the need of the patient. In accordance with the model priority scheme a ticket for priority in the supply of milk may be issued to any person holding a doctor's certificate that he is entitled on health grounds to a certain specified daily quantity of milk. Application for a priority ticket should be made for any invalid unable otherwise to obtain the quantity found medically desirable.

Extra Rations for Expectant and Nursing Mothers.

We have already noted[6] the concessions made on behalf of maternity.

Expectant Mothers during the last three months of pregnancy may be granted: 1. An extra ration of the amount represented by either 2 meat coupons or 1 butter coupon per week. Application is made on a special form containing a certificate to be signed by a doctor or by a certified midwife. 2. A priority certificate for 1 pint of milk daily in districts where a milk priority scheme is in force.

Nursing Mothers will not themselves receive extra rations or priority milk tickets, but the following clauses apply to them: 1. The child's ration book will be issued on application, accompanied by a birth certificate. Where the registration of birth is unavoidably delayed an emergency card will be issued in the meantime, giving a weekly ration equal to the infant's ration, the application being countersigned by the doctor or midwife in charge. These provisions apply whether the mother is nursing the child or not. 2. In the event of stillbirth, or the death of the infant within one month, the mother may on a doctor's certificate be regarded

[1] The actual word "tuberculosis" should appear on the certificate.
[2] Implying here and elsewhere butcher's meat.
[3] Including butter and margarine.
[4] The ordinary ration, which may vary from time to time.
[5] If desirable some euphemism, such as "new growth" or "neoplasm," may be used on the certificate.
[6] THE LANCET, June 8th, 1918, p. 811.

as a convalescent. 3. In districts where a milk priority scheme is in force children under 18 months are entitled to a preferential allotment of milk up to 1½ pints daily, the mother using the child's allowance if she is nursing the child.

At *Maternity Feeding Centres* approved by the Local Government Board expectant and nursing mothers may receive meat up to 12 oz. per head weekly without producing coupons for it.

Rations in Other Special Cases.

In cases of grave emergency, where the doctor certifies that the life of the patient is in danger unless extra rations are granted, Committees are authorised to grant extra rations for one week up to a maximum (including the ordinary ration) of meat, 2 lb., and butter, 2 rations. Renewal of this grant must be confirmed by the Ministry of Food. No ordinary diseases, other than those already referred to, are recognised as grounds for the issue of extra rations. In exceptional cases of disease the Committee may forward an application to the Special Diseases Subsection of the Ministry of Food (29, Upper Grosvenor-street, W. 1) for consideration by their medical adviser. Applications so forwarded must be supported by strong medical certificates, grants being made only in exceptional cases. In dealing with importunate patients it may be borne in mind that the doctor has no power to grant extra rations, but only to recommend such a grant when convinced of its necessity, the final responsibility resting with the Ministry of Food.

THE OXFORD OPHTHALMOLOGICAL CONGRESS.

THE annual meeting of the Congress was held at Oxford on July 11th and 12th. As in former years, members enjoyed the hospitality of Keble College, while the gatherings were held in the Department of Human Anatomy.

On the first day Mr. SYDNEY STEPHENSON opened with an address on the History of the Congress, after which Sir WILLIAM J. COLLINS, Doyne Memorial Lecturer for the year, opened a discussion on Ophthalmology and the War, in which the following, amongst others, took part: Lieutenant-Colonel R. H. ELLIOT (London), Captain E. H. E. STACK, R.A.M.C., Miss MARION GILCHRIST (Glasgow), Dr. T. HARRISON BUTLER (Leamington), Captain P. H. ADAMS, R.A.M.C., Captain PERCIVAL J. HAY, R.A.M.C., Captain THOMSON HENDERSON, R.A.M.C., Mr. R. J. COULTER (Newport, Mon.), Major A. C. PURCHAS, N.Z.M.C., Staff-Surgeon R. J. E. HANSON, R.N.V.R., Captain T. H. WHITTINGTON, R.A.M.C., Mr. J. GRAY CLEGG (Manchester), Dr. GEORGE YOUNG (Colchester), and Mr. BERNARD CRIDLAND (Wolverhampton). Colonel ELLIOT concluded the proceedings by reading a paper on Some Useful Devices in Operative and Other Work.

On the second day of the Congress Sir WILLIAM BARRETT, F.R.S., read a paper, accompanied by demonstrations and slides, on Entoptic Vision, a subject which has recently fallen into neglect by ophthalmologists. Colonel HANFORD MCKEE, C.A.M.C., followed with a paper on Some Aspects of Military Ophthalmology, summarising the conclusions of a wide ophthalmic experience during the war. The morning session concluded with two papers by Captain HAY on, (*a*) Implantation of Cartilage after Excision or Evisceration of the Eye; (*b*) Vulcanite Casts as a Support for Protheses, both of which were illustrated by photographs of operative results and radiograms. In the afternoon cases were shown at the Eye Hospital by Captain ADAMS and Dr. A. W. ORR, after which Colonel ELLIOT read a paper on Herpes, and Dr. BUTLER one on Cataract Operations. In the scientific museum Sir WILLIAM BARRETT gave demonstrations with the entoptoscope. Captain HENDERSON showed sections of monkeys' eyes with special reference to Descemet's membrane, and Captain ADAMS described the histology of a hitherto unknown disease causing blindness in horses. Captain STACK exhibited a combined perimeter and scotometer. Mr. COULTER showed improved test-types. In the commercial museum various novelties were on view.

The contributions to the Congress will appear in the Transactions of the Ophthalmological Society of the United Kingdom, with which the Congress is now affiliated.

A MONTHLY RECORD OF ATMOSPHERIC POLLUTION.

METEOROLOGICAL OFFICE: ADVISORY COMMITTEE ON ATMOSPHERIC POLLUTION: SUMMARY OF REPORTS FOR THE MONTHS *Oct. 31st, 1917.* ENDING *Nov. 30th, 1917.*

Place.	Rainfall in millimetres.	Metric tons of deposit per square kilometre. Insoluble matter. Tar.	Carbonaceous other than tar	Ash.	Soluble matter. Loss on ignition.	Ash.	Total solids.	Included in soluble matter. Sulphate as (SO_3).	Chlorine (Cl).	Ammonia (NH_3).
ENGLAND.										
Leicester	58	0·14	3·36	5·21	1·70	3·27	13·66	1·53	0·48	0·13
London—										
Meteorological Office	74	0·08	1·63	2·21	1·84	6·77	12·53	2·22	0·66	0·07
Embankment Gardens	61	0·13	2·37	3·58	7·83	20·76	34·66	8·97	2·35	0·18
Finsbury Park ...	92	0·06	1·08	3·94	2·84	6·13	14·05	3·75	0·64	0·08
Ravenscourt Park	79	0·08	1·76	7·22	1·65	1·79	12·49	1·96	0·38	0·13
Southwark Park	58	0·03	2·82	22·52	3·38	7·01	35·78	4·06	0·51	0·17
Wandsworth Com.	34	0·01	0·00	0·10	0·71	2·00	2·81	1·00	0·26	0·05
Golden Lane ...	73	0·05	3·64	5·16	3·80	4·97	17·62	2·91	0·70	0·23
Malvern	72	Nil.	0·15	0·43	0·38	0·56	1·52	0·36	0·15	tr.
Manchester—										
Queen's Park ...	125	—	—	—	—	—	14·40	—	—	—
School of Technology	109	—	—	—	—	—	21·00	—	—	—
Newcastle-on-Tyne	53	0·16	4·49	7·19	2·23	3·62	17·70	1·88	0·45	0·09
Rochdale	—	—	—	—	—	—	35·69	—	—	—
St. Helens*	—	—	—	—	—	—	—	—	—	—
SCOTLAND.										
Coatbridge	106	0·09	2·19	7·71	2·56	7·49	20·04	3·80	1·56	0·24
Glasgow—										
Alexandra Park...	97	0·18	2·76	4·94	1·45	10·19	19·52	3·20	0·85	0·19
Bellahouston Park	117	0·02	1·49	2·86	3·27	6·79	14·43	2·92	1·05	0·23
Blythswood-sq. ...	117	0·15	2·78	4·40	1·98	8·99	18·30	4·04	0·79	0·23
Botanic Gardens†	123	0·19	8·86	12·48	18·50	12·88	52·91	5·88	1·17	0·36
Richmond Park...	117	0·12	2·22	6·17	4·21	4·93	17·65	3·45	0·65	0·23
Ruchill Park ...	122	0·06	2·41	4·78	3·53	5·83	16·61	5·10	1·16	0·18
South Side Park.	154	0·08	0·87	3·20	3·38	4·60	12·13	2·80	0·58	0·04
Tollcross Park ...	125	0·19	2·60	8·63	7·47	6·60	25·49	4·57	0·77	0·12
Victoria Park ...	167	0·23	1·72	3·35	10·20	30·78	46·28	4·25	1·03	0·30

Place.	Rainfall in millimetres.	Metric tons of deposit per square kilometre. Insoluble matter. Tar.	Carbonaceous other than tar	Ash.	Soluble matter. Loss on ignition.	Ash.	Total solids.	Included in soluble matter. Sulphate as (SO_3).	Chlorine (Cl).	Ammonia (NH_3).
ENGLAND.										
Leicester...	24	0·06	1·25	3·15	0·94	2·38	7·78	1·29	0·35	0·07
London—										
Meteorological Office...	34	0·14	1·04	1·43	1·74	2·62	6·97	1·12	0·55	0·03
Embankment Gardens	31	0·14	3·41	7·05	4·43	9·22	24·25	4·93	1·14	0·28
Finsbury Park ...	49	0·05	0·86	3·11	2·07	4·72	10·81	2·67	0·47	0·05
Ravenscourt Park	23	0·08	1·35	3·55	0·81	1·75	7·53	0·93	0·26	0·05
Southwark Park...	48	0·05	3·00	8·54	2·94	5·76	20·28	3·24	0·80	0·10
Wandsworth Com.‡	—	—	—	—	—	—	—	—	—	—
Golden Lane ...	37	0·05	2·40	3·14	1·04	2·96	9·59	1·42	0·49	0·09
Malvern	22	Nil.	0·05	0·12	0·41	1·15	1·75	0·36	0·15	0·01
Manchester—										
Queen's Park ...	102	—	—	—	—	—	10·90	—	—	—
School of Technology	70	—	—	—	—	—	13·20	—	—	—
Newcastle-on-Tyne	23	0·10	3·31	8·04	1·45	2·20	15·10	1·15	0·37	0·02
Rochdale...	—	—	—	—	—	—	35·69	—	—	—
St. Helens	101	0·93	4·48	7·35	5·05	4·79	22·60	3·63	2·22	0·20
SCOTLAND.										
Coatbridge§	—	—	—	—	—	—	—	—	—	—
Glasgow—										
Alexandra Park...	118	0·14	1·53	3·36	3·54	4·46	13·03	3·31	0·30	0·21
Bellahouston Park	126	0·12	0·96	1·92	4·27	4·53	11·79	3·32	0·45	0·15
Blythswood-sq. ...	152	0·08	1·75	4·57	3·19	6·07	15·67	3·86	0·35	0·30
Botanic Gardens..	119	0·25	1·11	1·75	6·53	6·77	16·41	4·52	0·34	0·10
Richmond Park...	125	0·28	1·90	5·91	3·99	4·75	16·83	3·30	0·22	0·33
Ruchill Park ...	120	0·41	1·03	2·22	2·29	5·49	11·44	3·21	0·27	0·18
South Side Park..	114	0·09	0·40	1·45	2·74	2·85	7·53	2·11	0·28	0·12
Tollcross Park ...	130	0·38	1·59	3·92	5·09	7·30	18·28	3·97	0·24	0·13
Victoria Park ...	109	0·01	1·40	2·38	3·38	7·18	14·35	3·47	0·41	0·16

* Sample lost in transit. † Sample contained considerable amount of sandy matter. ‡ No returns. § Bottles burst. tr. = trace.

"Tar" includes all matter insoluble in water but soluble in CS_2. "Carbonaceous" includes all combustible matter insoluble in water and in CS_2. "Insoluble ash" includes all earthy matter, fuel, ash, &c. One metric ton per sq. kilometre is equivalent to: (*a*) Approx. 9lb. per acre; (*b*) 2·56 English tons per sq. mile; (*c*) 1 g. per sq. metre; (*d*) 1/1000 mm. of rainfall.

The personnel of public health authorities concerned in the supervision of these examinations and of the analytical work involved remains the same as published in previous tables. The analyses of the rain and deposit caught in the gauge at the Meteorological Office are made in THE LANCET Laboratory.

Correspondence.

"Audi alteram partem."

THE CASE OF DR. JOHN HENDERSON BELL.

To the Editor of THE LANCET.

SIR,—On June 29th of last year Dr. John Henderson Bell was convicted of "attempting to produce a disease in a man belonging to H.M. Forces" and in the following week of "doing an act preparatory to producing a disease or infirmity" in another member of H.M. Forces, and on conviction was sentenced to six months' imprisonment with hard labour. The sentence on appeal was modified to imprisonment for the same term in the second division.

At the last meeting of the General Medical Council his case came before the Council, sitting to hear disciplinary charges against practitioners. The Council received evidence tendered at length by Dr. Bell and by counsel on his behalf, with the result that they did not see fit to erase his name from the Medical Register. The fact of conviction was accepted by the Council, reference being limited to the consideration whether or not the evidence justified removal of Dr. Bell's name from the Register. Dr. Bell in his statement described the treatment which he had administered in the two cases. In that treatment he appears to us to have followed a perfectly usual medical routine.

The first patient, a deserter who had stolen another man's papers, complained of a condition for which the treatment given would have been suitable. This man, who may have believed what he said, informed the military police that an operation had been performed upon him by Dr. Bell with a view to rendering him unfit to rejoin the Army. The second patient was an *agent provocateur* acting under the orders of the police, and such treatment as he received was the perfectly correct proceeding on the part of a medical man who was attempting to make a diagnosis. Dr. Bell's arrest was effected by a concealed police officer while he was in attendance on the *agent provocateur*. Not only did Dr. Bell treat the alleged conditions in accordance with the usual medical practice, but he received only the ordinary and modest fee from the first patient, an imposter who appears to have paid a sum of money to a third person in order to obtain medical treatment which would produce a disease. Dr. Bell did not receive that money, nor did the prosecution suggest that he had received it. No motive, therefore, for the imputed misdemeanour was alleged, while Dr. Bell's actions were in consonance with his entire innocence.

At the time of the conviction THE LANCET stated that there had been a miscarriage of justice. This miscarriage has been rectified to a certain extent—that is to say, Dr. Bell's name has not been removed from the Medical Register, a proceeding which follows automatically upon a criminal conviction. The decision of the General Medical Council not to erase his name from the professional roll was received not only by Dr. Bell's friends and patients, but also by the medical public, with profound approval. But, while his good name is thus restored to him, he remains under the weight of a substantial pecuniary burden. His misfortunes have cost Dr. Bell at least £800, and, despite the many claims upon the charity of medical men, we hope that a subscription may be raised at once to relieve him from this debt. There is not a medical man who may not find himself exposed to similar charges and victimised by similar proceedings.

We shall be very happy to receive subscriptions to a fund to reimburse Dr. Bell his expenses.

We are, Sir, your obedient servants,

DAVID FERRIER, WILLIAM OSLER,
G. LOVELL GULLAND, STCLAIR THOMSON.

July 22nd, 1918.

Subscriptions should be sent to Dr. Kinnier Wilson at 14, Harley-street, W. 1, and will be acknowledged in the columns of *The Lancet* and the *British Medical Journal*.

THE BACTERIOLOGY OF THE PREVAILING PANDEMIC.

To the Editor of THE LANCET.

SIR,—In your issue of July 13th Captains Little, Garofalo, and Williams write of their finding a small Gram-positive diplococcus as the predominating organism in the secretions of 20 cases from the prevailing pandemic, and of their inability to find *B. influenzæ* (Pfeiffer). As you state on p. 51 that this is the first serious contribution to its bacteriological study, it would seem of value to record contrary findings, few though they may be.

The expectorated sputum from a small group of typical cases was taken, as far as possible, early in the course of the disease. After washing the sputum in several changes of salt solution cultures were made on whole-blood agar and stained films prepared. In three-quarters of the number a typical small, watery, transparent, discrete colony was found in more or less profusion (in one case in almost pure culture). Films from these colonies gave a short, moderately slender, Gram-negative bacillus, tending to form groups, that was therefore considered to be *B. Pfeiffer*. The stained films also showed numerous rods of the same morphology as the cultures, although other rods and various cocci were present in all films, and in some cases numerous.

According to verbal report, investigations of other bacteriologists with the B.E.F. in France tend to support the view that the present pandemic is due to infection by Pfeiffer's bacillus, and therefore truly influenza. I quite agree, however, that the term influenza should be restricted to such cases and other names be given to epidemics due to streptococci (such as the recent Chicago outbreak investigated by Capps and Rosenow), diplococci, or other organisms.

I am, Sir, yours faithfully,

E. B. KRUMBHAAR, M.D., PH.D.,
16 (Phila., U.S.) Gen. Hosp., B.E.F., Capt., M.R.C., U.S.A.
July 19th, 1918.

THE STERILISATION OF INFECTED WOUNDS.

To the Editor of THE LANCET.

SIR,—In the article by Colonel Sir Almroth Wright and his colleagues on the physiological sterilisation of infected wounds in THE LANCET of June 15th two facts are brought to light which must be regarded as of great importance in the future development of the treatment of gunshot wounds. These observers have shown: (1) that putrefactive organisms are destroyed by healthy serum alone; (2) that streptococci and staphylococci, while thriving in serum, are destroyed by leucocytes in the absence of excess of serum.

These important observations seem to establish a reasonable basis on which to build up the principles of treatment of wounds infected by these organisms. That caution is necessary, however, in the application of knowledge gained in the laboratory to conditions met with in the actual practice of surgery is shown by the fact that the conclusions drawn by Sir Almroth Wright from his experimental results, in so far as they refer to the closure of infected wounds, are far removed from those arrived at by clinical experience. Sir Almroth Wright states that wounds after early surgical cleansing and resection are "as good as sterile," and can be sutured with only the risk of an "occasional" failure if no dead spaces have been left. This is in general true, provided that the wound has not before operation been infected with virulent streptococci. But it is now commonly recognised by surgeons who have worked at the closure of wounds that in the presence of these organisms suture is almost certainly foredoomed to failure, and, furthermore, that unless the sutures are quickly removed and the wound laid widely open grave danger to the patient is likely to ensue.

Sir Almroth Wright also states, if I understand him correctly, that wounds infected with hæmolytic streptococci, on the surface of which there is abundance of leucocytes—i.e., pus—can be safely sutured if the serum be first carefully removed by dry gauze and the surfaces brought into accurate apposition. This is also contrary to all surgical experience, and there can be no doubt but that anyone who attempts such a proceeding is courting disaster. The results, therefore, of these ingenious experiments do not appear to coincide with the facts of clinical experience, and it is necessary to inquire wherein lies the discrepancy—for discrepancy there certainly is. The accuracy of experimental results vouched for by Sir Almroth Wright is of course beyond question. The clinical facts which I have mentioned are also beyond question, having been independently confirmed by a host of workers, both British and French. The explanation must therefore be that some material difference exists between the conditions of the experiments conducted in Sir Almroth Wright's laboratory and those made every day by surgeons

in the operating theatre and wards. In the laboratory the leucocytes and organisms are confined within the impenetrable barriers of a glass cell. Save by the reproduction of the individuals concerned, no reinforcements can reach this arena, and no undesirable drops of serum can exude into it. He is dealing with a thin stratum of relatively homogeneous material—i.e., serum, leucocytes, and organisms—evenly infected throughout its depth. The surgeon is dealing with tissues of varying resistance and quality, whose blood and lymph supply is endlessly variable from case to case, and which are infected to varying depths from the accessible surface. It does not seem to me to be possible to argue from one to other. A bacteriological study of the walls of infected wounds by means of sections must be an essential item in any attempt to reconcile these laboratory results with the experience of practical surgeons; at present, in spite of the great merit of his contributions to our knowledge, Sir Almroth Wright appears to me to be arguing dangerously upon a false analogy.

It must be noted, also, that the conditions postulated by Sir Almroth Wright for success in the closure of wounds infected by streptococci can seldom be attained in the human body. How is it possible to close any wound in such a way as to prevent the exudation of a few drops of serum between its surfaces? And yet a drop of serum at any point, according to Sir Almroth Wright's own showing, may enable the streptococcus to thrive there and vitiate the result. Such perfect microscopic apposition of surfaces as would be required to fulfil the conditions laid down appears to be beyond our reach. It has been suggested by Sir Almroth Wright himself that failures of primary suture after early excision of wounds may be due to absence of sufficient numbers of leucocytes at this stage. This may be so, but whatever the explanation, the fact remains that the primary suture of wounds which contain, before operation, hæmolytic streptococci will practically always fail.

Full of suggestion as these researches are regarding the further evolution of the treatment of septic wounds, it is necessary to accept the conclusions drawn from them with reserve, for to act too hastily on the principles laid down would involve unnecessary and unjustifiable risk to wounded men. I am, Sir, yours faithfully,

FORBES FRASER,
Captain, R.A.M.C.

France, June 18th, 1918.

INFANT MORTALITY AND MOTHERCRAFT.

To the Editor of THE LANCET.

SIR,—Dr. H. W. Pooler's main criticisms in his article on this subject in your issue of July 6th are two in number: (1) that I have endeavoured to eliminate poverty as a cause of infant mortality; and (2) that I have underestimated the value of "mothercraft." With regard to (1), I have certainly never attempted to ignore poverty as a cause of infant mortality and many other manifestations of ill-health. My view is quite clearly expressed that poverty acts mainly as a cause of ill-health by forcing people to live in crowded and insanitary areas, and that under rural conditions it is possible to be earning very low wages and at the same time to enjoy a high degree of health. I illustrated this by comparing the low rates of infant mortality among agricultural labourers in England and the poverty-stricken peasants of Ireland with the high rates prevailing among the much better paid miners. Dr. Pooler is not accurate when he states that the real excess of infant mortality only occurs among the unskilled and casual workers of the town slums and not amongst the skilled and respectable artisans of the better type of working-class neighbourhoods. There is, as a matter of fact, an excess in the infant mortality rates among all classes in large urban districts when compared with agricultural areas, even in the wealthy districts of the West End of London. The slum areas are, however, the worst, and in my opinion as long as people are living in these surroundings they will be unhealthy and their infant mortality rates will be excessive, even though their wages were increased tenfold.

On the second point—the value of mothercraft, and the effect of industrial employment in preventing mothers from looking after their infants—Dr. Pooler emphasises his views by referring to the decline of infant mortality during the Lancashire cotton famine and the siege of Paris, which he attributes to the return of the mothers to their homes and the increase of breast-feeding, and greater opportunities for domestic care and cleanliness. I have not studied infant mortality during the two periods he refers to, but it is very difficult to accept the remarkable explanation he gives. On the other hand, during the war there has been an unprecedented increase in the industrial employment of women, and it is reasonable to suppose that many thousands of mothers have been able to devote far less time to their households and to the feeding of their infants than they would have done under normal circumstances; yet these years have not been accompanied by any rise in the rate of infant mortality.

Dr. Pooler says: "Mothercraft means carefulness, personal cleanliness, clean bedding, clean floors, proper storage, preparation of food (including milk), frugality, thrift, sobriety, early hours, and, above all, breast-feeding." In your leading article, sir, you quote this observation, and you add, "The opportunities for all these things the countrywoman possesses to a far greater extent than her sister in the slums." Again, after referring to insanitary conditions in country cottages, Dr. Pooler says: "It is always possible during part of the 24 hours for the infants to be right away from their noxious influence. On the other hand, in the overcrowded areas of large towns, and in many mining villages, it is a sheer impossibility for the infant to get away from the effects of his own immediate environment or that of his neighbours." Both these statements admit my whole position. It is not nearly so much teaching which the town mother needs as the *opportunities* for carrying out that teaching. The average working-class mother is not such a fool as she is painted. She knows perfectly well that the right things for her baby are good and nourishing food, cleanliness, and healthy surroundings, but in the overcrowded slum districts of our large towns it is often utterly impossible to provide these, where the air is charged with soot and everything rapidly becomes dirty, efficient ventilation of the streets is impossible, the living rooms are small and crowded, baths may be unknown, the milk-supply is unsatisfactory, the storage room for food and domestic utensils is inadequate, and there is nowhere for the children to play except the streets.

I do not wish to depreciate the value of maternity and infant welfare centres any more than I wish to depreciate the teaching of hygiene and the maintenance of hospitals, because I believe that tuberculosis is very largely an environmental disease only to be effectively attacked by destroying vicious surroundings; and nowhere have I suggested that these institutions should be "incontinently scrapped." But I do wish to protest against the tendency to attach an exaggerated importance to maternal ignorance as a cause of infant mortality. I am of opinion that the main cause of excessive infant deaths, as of tuberculosis, malnutrition of school children, and other evils, is overcrowding of houses, congestion of streets, and the absence of large and sufficient open spaces, and so long as these unhealthy areas remain any measures taken can only be regarded as palliative.—I am, Sir, yours faithfully,

W. A. BREND.

The Medical School, Charing Cross Hospital, July 12th, 1918.

To the Editor of THE LANCET.

SIR,—Dr. H. W. Pooler's article in your issue of July 6th raises many important questions, and I think that he shows the futility of generalisation in such a complex problem. Those of us who have been doing this work for some years will agree with him in his concluding remarks that "every district has its own problems to solve. In one it may be housing; in another sanitation; in another poverty and underfeeding; in another overfeeding or improper feeding, carelessness, and low morale; and in yet another it may be atmospheric pollution, and in most a combination of some or all of these."

I feel that the work done at infant welfare centres could be made much more convincing if we could show that the infant mortality in a given district was lower amongst those attending the centres than amongst those not attending. This would entail a slight alteration in the statistical tables of the medical officer of health. I feel sure it ought to be done, and the result, I think, would be disconcerting to the polluted atmosphere theorists. Dr. Pooler in his Table VI. gives the weights of infants attending the consultations in both bad and good homes, but we surely do not require tables to convince us of the fact that a child will do better

in a good home than in a bad one. He also gives us the mortality figures amongst the previous children—viz., those who did not attend his consultations—but what we really want to know are the mortality figures of those attending his consultations, and the ages in both sets must, of course, correspond. I am, Sir, yours faithfully,

H. RONALD CARTER, M.D.,
Kensington, W., July 14th, 1918. Temp. Capt., R.A.F.

QUICK DIAGNOSIS IN MENINGOCOCCUS INFECTION.

To the Editor of THE LANCET.

SIR,—With regard to the paper in THE LANCET of July 13th on the above subject, Captain A. E. Hodgson asks whether the complement fixation by the patient's serum may not be due to antibodies introduced in the curative serum administered. This criticism was anticipated, and an additional communication was sent to THE LANCET to be appended to the original article, but delay in transmission prevented its publication.

The paragraph ran:—

"It may be argued that the results obtained were due to antibodies contained in the curative serum which was administered intrathecally, and that these antibodies had found their way into the blood stream.

Against this view are the following facts. Cases (c), (i), (j), and (o) were tested before serum was given. Case (b), which gave a clean-cut result, was treated only with a pooled serum—i.e., one consisting of the four types—and the same is true, at the time of testing, of 8 out of the remaining 11 cases."

There is a further argument. The blood content of a fair-sized man is some 5 litres. The size of an average intrathecal injection is 30 c.cm. Now, even if it be supposed (disregarding all other body fluids) that the whole of the antibodies find their way into the blood stream, the resulting dilution of the curative serum would be 1 : 166. In the test the lowest dilution of patient's serum was 1 : 50, which gives a final series of dilutions of the curative serum of 1 : 8300, 1 : 16,600, and 1 : 33,200.

We have tested the majority of the curative sera given in these cases and have not got in any complete complement fixation in the lowest of the above dilutions. Apparently, therefore, in cases of meningococcal infection, there is a source additional to the curative serum from which antibodies are produced.—We are, Sir, yours faithfully,

ARTHUR S. G. BELL,
Major, R.A.M.C.;
I. M. HARMER.
Central C.S.F. Laboratory, Caxton-street, S.W., July 20th, 1918.

SEXUAL PERVERSION.

To the Editor of THE LANCET.

SIR,—I was interested to read the excellent letter of Sir Bryan Donkin in your issue of July 13th, and, although I cannot quite agree with him that "inherited perversion" plays the most prominent part among the five classes which I enumerated, I admit that his wide experience as Director of Convict Prisons, as member of the Royal Commission on the Feeble Minded, and as hospital physician must be respected. I think I ought to have used the words "inherited disposition to sexual perversion" instead of "inherited perversion." There are a large number of such cases. The inherited disposition is there, but it is the environment and the taught or inculcated pernicious habits that produce the sexual perversion.

The whole question is most important, and I must still maintain that my other classes are numerically very large and are still increasing.

I am, Sir, yours faithfully,
Bournemouth, July 19th. LIONEL A. WEATHERLY, M.D.

METHODS OF GENERAL ANÆSTHESIA IN FACIAL SURGERY.

To the Editor of THE LANCET.

SIR,—With reference to Captain T. Lovett's letter in THE LANCET of June 22nd, while I agree that preliminary laryngotomy is almost the ideal method for anæsthesia in facial surgery, at the same time my experience of these patients is that it is not a single operation which is required, but anything from four to twelve. I should very much like to see the condition of a trachea or larynx after it had been reopened so many times. From my two years' experience in working with Mr. P. P. Cole at King George Hospital rectal oil-ether administration seems to be the best, when it is successful, but unfortunately one cannot guarantee the depth of anæsthesia. The next best method appears to be the intratracheal, either with the ordinary intratracheal catheter or Kühn's tube.—I am, Sir, yours faithfully,

Dawson-place, W., July 18th, 1918. HUGH R. PHILLIPS.

REST AS A FACTOR IN THE HEALING OF LEG WOUNDS.

To the Editor of THE LANCET.

SIR,—One of the chief objects of military surgery is the restoring of men to duty as soon as possible. May I, in connexion with this, draw attention to a point of war hospital practice which I think is of importance—namely, the length of time that is spent in the ultimate healing of wounds of the lower extremity owing to the want of complete rest. It seems to be the general practice to allow a man to be up, on crutches or with sticks, before his wound is finally healed, and it is no uncommon thing for weeks to be occupied in the final healing of a small granulating surface of a leg wound which would have healed in as many days if the man had been kept in bed for a little longer. It is difficult at V.A.D. hospitals to put back to bed a man who has been allowed to be up and about for a fortnight at the war hospital.

The point may seem a small one, but the number of cases involved is very great, and the total number of days lost in the prolonged healing of these leg wounds must be very considerable. If a general rule were suggested in one of those polite circulars ending "for your information, please," to the effect that all patients with leg wounds should be kept in bed until the wound had finally healed, many days in hospital would be saved.

I am, Sir, yours faithfully,
Bromsgrove, July 19th, 1918. H. CAMERON KIDD.

GÜNZBURG'S TEST.

To the Editor of THE LANCET.

SIR,—Günzburg's test for free hydrochloric acid being so widely used in the examination of test meals and being the only reliable test for that substance, the following modifications may be found useful at the present time.

The Günzburg's test materials consist of phloroglucin, vanillin, and absolute alcohol. Of these, the alcohol is not necessary; the vanillin is easily obtainable and the phloroglucin cannot be obtained at all. The majority of laboratory workers have probably used up all their pre-war stock of phloroglucin, and some may be in need of a substitute. Both orcin and resorcin may be used instead of phloroglucin. The test works equally well with either substance. Orcin is difficult to obtain, even in small quantities, and costs about 2*s.* a drachm. Resorcin is readily obtainable at a cost of 4*s.* 6*d.* an ounce. The amount of substance required for a test is extremely small. A few small crystals of vanillin and of orcin or resorcin dissolved in a drop of the test-meal filtrate and evaporated to dryness give a very clear result. The colour reaction with orcin or resorcin is slightly more purple than with phloroglucin; otherwise the test behaves exactly as with Günzburg's reagent, is positive with very dilute hydrochloric acid in protein solution, and is negative with combined HCl and with lactic acid.

I am, Sir, yours faithfully,
P. N. PANTON, M.A., M.B., B.C. Cantab.,
July 12th, 1918. Clinical Pathologist to the London Hospital.

"HEALTH RESORTS OF THE BRITISH ISLANDS."

To the Editor of THE LANCET.

SIR,—Owing to war conditions, so great is the difficulty of getting into touch with the original contributors to the pages of the above-named work, that I seek permission through your columns to invite those writers, and others representing health resorts, to send as soon as possible, for a revised edition now in preparation, notes on changes of importance during the past six years, addressed to me.

I am, Sir, yours faithfully,
EDITOR OF "HEALTH RESORTS, &c."
42, Elvaston-place, S.W. 7, July 10th, 1918.

The War.

THE CASUALTY LIST.

THE following medical officers appear among the casualties announced since our last issue:—

Killed.

Capt. E. P. W. Wedd, M.C., R.A.M.C. and Yeomanry, was educated at Cheltenham and at Cambridge, and at St. Bartholomew's Hospital, London, and qualified in 1911. He held appointments at St. Bartholomew's and at the East London Hospital for Children, Shadwell. In the early 1900's he was a well-known oarsman, and rowed for his University against Oxford in 1905. On the outbreak of war Capt. Wedd was already in the Essex Yeomanry, and went to the front in November, 1914, in a combatant capacity. Later he transferred to the R.A.M.C. He was mentioned in despatches and awarded the M.C. in April last year.

Previously reported Wounded and Missing, now reported Died of Wounds.

Capt. P. M. MacLachlan, M.C., R.A.M.C., attached Hampshire Regiment. The award of the M.C. was recorded in THE LANCET of Nov. 24th, 1917, p. 805.

Wounded.

Capt. J. M. Forsyth, M.C., R.A.M.C.
Lieut. F. S. Adams, R.A.M.C., attached S. Wales Borderers.
Capt. G. A. Russell, Canadian A.M.C.

Previously reported Missing, now reported Prisoners in German Hands.

Capt. W. G. Harnett, R.A.M.C.
Lieut. A. S. Findlay, R.A.M.C.
Capt. A. C. Hepburn, R.A.M.C.
Capt. W. J. Hirst, R.A.M.C.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported:—

Corpl. J. Moxon, A.I.F., died of wounds, youngest son of the late Dr. W. Moxon, J.P., of Matlock, Derbyshire.
Lieut. R. A. Edwards, West Yorkshire Regt., died of wounds, youngest son of Lieut. E. H. Edwards, R.A.M.C.
Gunner H. T. Pridham, R.F.A., died from illness contracted on service, son of the late Mr. J. W. Pridham, L.R.C.P., M.R.C.S., of Hillfield, Broadway, Dorset.
Capt. W. R. G. Pearson, R.A.F., accidentally killed through a collision in the air, second son of Dr. S. Pearson, of Clapham-road, London, S.W.

OBITUARY OF THE WAR.

WILLIAM McQUIBAN, M.B., CH.B. ABERD.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain W. McQuiban, who died on active service on May 2nd, aged 44 years, was educated at Gordon College, Aberdeen, where he was Queen's prizeman in marine engineering. He took his medical course at Aberdeen University, qualifying in 1901 and holding appointments as house surgeon at Aberdeen Infirmary and clinical aural assistant at the London Hospital. Since 1902 he was in practice at Stoke Newington. Joining the R.A.M.C. in 1916 he saw service in India and Egypt. While acting as consulting surgeon to a unit in Palestine he was taken ill in April, dying of heart failure. His commanding officer writes of Captain McQuiban that he went out of his way to help others and that no work was too much trouble to him. Captain McQuiban had published work on scientific engineering and on the measurement of blood pressure. His wife, who was the widow of the late J. F. Kendal, F.R.G.S., survives him.

RICHARD AMYAS PRESTON, M.B., B.S. LOND.,

MILITARY CROSS AND CROIX DE GUERRE,
LIEUTENANT-COLONEL, ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonel R. A. Preston, who died of wounds on June 7th at the age of 27, was second son of the late A. Eley Preston, M.I.C.E., of St. Mawes, Cornwall. He qualified at the London Hospital, and before taking his M.B., B.S. degree he served in the Balkan War of 1912–13. When the present war broke out he was holding an appointment at the Poplar Hospital, which he resigned on receiving a commission in the R.A.M.C. He went to France early in August, 1914, was twice mentioned in despatches, and was awarded the Military Cross during the retreat from Mons. He also received the Croix de Guerre, and last year he was given the temporary rank of lieutenant-colonel while in command of a field ambulance. He was mortally wounded while attending to the removal of patients under heavy bombardment, and died the same day. Colonel Preston married in 1916 the daughter of the late Charles S. Crawford, of Newcastle-upon-Tyne.

JOHN WATT SENTER, M.B., CH.B., B.SC. EDIN.,

LIEUTENANT, ROYAL ARMY MEDICAL CORPS.

Lieutenant J. W. Senter, who died of wounds on June 9th at the age of 38, was youngest son of the late George Senter, farmer, of Kildrummy, Aberdeenshire. He was educated at Kildrummy Public School and first took up pharmacy, being apprenticed to a pharmaceutical chemist at Mossat. During the South African war he acted as a dispenser in the R.A.M.C., and upon his return to Scotland passed the qualifying examination of the Pharmaceutical Society in 1902. Soon afterwards he started business on his own account as a pharmacist, and whilst so engaged studied medicine at Edinburgh University, graduating M.B., Ch.B., in 1910 and B.Sc. Public Health in 1912. After holding special appointments in the eye and throat departments at the Royal Infirmary, he started in general practice in Edinburgh with every prospect of a useful professional career. Lieutenant Senter joined the Army in June, 1917, and met his death while in charge of an advanced dressing station on the western front. His promotion to captain was due in a few days. His superior officer writes that his work and his companionship will both be missed. Lieutenant Senter leaves a widow and four children.

THE HONOURS LIST.

The following are the statements of service for which the decorations recorded in THE LANCET of Feb. 23rd, 1918, p. 313, were conferred. All are members of the R.A.M.C. except where otherwise stated:—

Second Bar to the Military Cross.

Temp. Capt. ARCHIBALD FULLERTON, M.C.—For conspicuous gallantry and devotion to duty. He worked untiringly under heavy shell and machine-gun fire, attending to the wounded of his own and other units. His fearless conduct undoubtedly saved many lives.

Bar to the Military Cross.

Capt. WILLIAM FOTHERINGHAM, M.C., Spec. Res.—For conspicuous gallantry and devotion to duty. He attended to the wounded in an exposed position under heavy hostile gas shell fire. Though suffering badly from gas he continued at work with the greatest courage and determination until he was blinded by gas.

Temp. Capt. WILLIAM JOHN KNIGHT, M.C.—For conspicuous gallantry and devotion to duty. He worked continuously during an engagement attending to the wounded under heavy fire, and later went into a village which was being heavily shelled and brought away several wounded men. He went back to the front line after the position had been evacuated and brought back several badly wounded men. He worked with untiring energy throughout the operations and saved many lives.

Capt. THOMAS AINSWORTH TOWNSEND, M.C.—For most conspicuous gallantry and devotion to duty. Although twice wounded he refused to have his wounds attended to, and continued to dress the wounded under a continuous and heavy concentration of high-explosive and gas shells. Not only did he attend the wounded and gassed of his own unit, but rendered aid, under conditions of great difficulty, to wounded of neighbouring battalions whose medical officers had become casualties. His complete disregard of personal danger and splendid devotion were a magnificent example to all.

Capt. FREDERICK WILLIAM LEES, M.C., Canadian A.M.C.—For conspicuous gallantry and devotion to duty. He worked untiringly attending to the wounded and superintending their evacuation. Though his aid-post was continually under heavy shell fire he carried on his work with an energy and cheerfulness which were a splendid example to all. He saved many lives by his devotion to duty.

The Military Cross.

Temp. Capt. ERIC PHILLIP BLASHKI.—For conspicuous gallantry and devotion to duty. He went forward during an engagement and established a dressing-station in an advanced position. He remained at his post under heavy shelling and collected the wounded from an area swept by machine-gun fire. He showed the greatest courage and resource.

Capt. FRANK CHADWICK.—For conspicuous gallantry and devotion to duty. After the troops had been withdrawn he remained with the wounded all night in an advanced position and organised their removal in the face of great difficulties. By his courage and determination he succeeded in getting all the wounded away.

Temp. Capt. THOMAS MAITLAND CRAWFORD.—For conspicuous gallantry and devotion to duty. He was wounded and rendered temporarily unconscious by a shell which mortally wounded the colonel and adjutant of his battalion. As soon as he recovered he attended to their wounds, and remained on the spot without having his own wounds dressed until stretcher-bearers arrived. He reported to brigade headquarters before having his wounds attended to, and showed splendid courage and self-sacrifice.

Temp. Capt. WILLIAM CLAUGHTON DOUGLAS.—For conspicuous gallantry and devotion to duty. While returning from the regimental aid-posts he came under a heavy barrage, and was slightly wounded. Seeing that some men further back had been wounded, he at once went to their assistance, got them under the only available cover, attended to their wounds, and organised stretcher parties for their removal. His prompt and gallant action saved the lives of two seriously wounded men.

Capt. ARCHIBALD McLAREN FERRIE, Spec. Res.—For conspicuous gallantry and devotion to duty. He continually exposed himself to heavy fire in attending to the wounded during an attack. Later, when an officer was wounded and was lying out in an exposed position, he crawled out and brought him in over ground swept by the enemy's fire. His gallantry and courage undoubtedly saved many lives.

4th Class Assistant Surg. JAMES GARNETT GOODMAN, I.S.M.D.—For conspicuous gallantry and devotion to duty. He remained tending the wounded under heavy fire until every case had been evacuated, after which he followed the battery into action. On the previous day, seeing the battery come under an intense shell fire, he at once went up to the guns to render assistance. His coolness, initiative, and keenness were most marked.

Temp. Capt. JAMES HUNTLY LEGGE.—For conspicuous gallantry and devotion to duty in an enemy counter-attack, which almost succeeded in penetrating to his aid-post. With the greatest coolness and courage he continued his work of clearing the wounded, not only of his own battalion, but of other units. Throughout the hostile fire was intense, and it was due to his untiring efforts that so many wounded were quickly and efficiently evacuated.

Capt. REGINALD DEVEREUX MOORE.—For conspicuous gallantry and devotion to duty. He worked continuously for eight days attending to the wounded at an advanced dressing-station, often under shell fire. His organisation of the work was excellent, and by his courage and cheerfulness he inspired all ranks with confidence, which assisted them materially in the performance of their duties.

Capt. JOHN GILBERT MORGAN.—For conspicuous gallantry and devotion to duty. When the advanced dressing-station had been ordered to withdraw he went forward with a party of bearers and successfully cleared a number of wounded from the regimental aid-posts. The operation was carried out under continuous shell and machine-gun fire.

Temp. Capt. JOHN OSCAR THOMAS.—For conspicuous gallantry and devotion to duty. He dressed a wounded officer and man under heavy fire and got them to a place of safety. He showed great coolness and courage.

Temp. Capt. PHILIP HEWER WELLS.—For conspicuous gallantry and devotion to duty. He attended to the wounded of several units who were lying out in an exposed position under fire. He worked throughout the night, often under an intense bombardment of gas and H.E. shells, and by his courage and self-sacrifice saved many lives.

Temp. Capt. ERNEST WILLIAM GILMORE YOUNG.—For conspicuous gallantry and devotion to duty. He collected and dressed the wounded in an exposed position under heavy fire, and remained on the spot after the withdrawal of the regiment until all the wounded had been brought in.

Capt. GAVIN YOUNG, Spec. Res.—For conspicuous gallantry and devotion to duty in attending to the wounded under heavy machine-gun fire. He worked up to the leading wave and searched the whole ground for wounded under continuous fire, and owing to his exertions all the wounded were evacuated with great rapidity. Later he showed great courage and devotion to duty in rescuing wounded from destroyed dug-outs under shell fire.

Capt. GEORGE MAY FOSTER, Canadian A.M.C.—For conspicuous gallantry and devotion to duty. He was in charge of the evacuation of the wounded from the front line during the operations, and set a splendid example to his stretcher-bearers by his courage and determination. He led a party to remove several stretcher cases under heavy shell fire, and though wounded himself he attended to their wounds and arranged their removal.

Capt. ALFRED STANNAGE PORTER, Canadian A.M.C.—For conspicuous gallantry and devotion to duty. He dressed many wounded during the operations, working in the open under intense fire, and set a splendid example of courage and self-sacrifice.

Lieut.-Col. D. L. IRVINE (late R.A.M.C.), at present working on the Western front under the French Red Cross, has been awarded the Croix de Guerre for his services with Motor Ambulance, Section 10, with the French Army.

THE LONDON RECRUITING BOARDS.

On the invitation of Sir Charles Bedford, the Commissioner of Medical Services for the London Region, 200 of the chairmen and members serving on the London recruiting boards met the Chief Commissioner, Sir James Galloway, K.B.E., C.B., in the Caxton Hall on Tuesday afternoon last. Sir James Galloway took the chair, and was accompanied by Sir Charles Bedford and Sir John Collie, representing the Ministry of Pensions. Sir Charles Bedford, in his introductory remarks, mentioned that the boards in the London region had had to be increased from 20 in March last, when he took charge, to 54 to-day, and offered personal thanks for the good work done. Sir James Galloway welcomed the opportunity of congratulating the chairmen and members of the London recruiting boards in the name of the Ministry of National Service for the whole-hearted manner in which they had carried out their very arduous duties. He added that neither on the administrative or executive side had perfection yet been attained and that all efforts must be put forth to improve their organisation and the quality of their work, while a comparatively quieter time allowed them to discuss matters among themselves. Sir James Galloway pointed out that much of the work was pioneer, while the boards were for the most part drawn from private practitioners who in the past had to deal only with the sick and diseased, and who had not had full opportunity of knowing what the normal condition of health was in reference to climate, nature of work, crowded surroundings, and other conditions of life. Conscription, he said, had given the profession the first real chance of studying these questions, and advantage should be taken of it to the full with a view to the improvement in the general health of the people by legislation or otherwise. Sir John Collie referred to the bearing which efficient medical examinations and grading would have when pensions were dealt with.

MEDICAL GRADING OF OLDER MEN.—A Memorandum (R. 218) has been issued by the Local Government Board and the Scottish Office to tribunals, instructing them to deal with the medical grading of men of the older ages in accordance with the statement made in the House of Commons on July 8th by the Minister of National Service (see THE LANCET, July 13th, p. 63). The Memorandum adds:—

> The requirements of the forces for men of all ages in Grade 1 and for men of the former military ages in Grade 2 are great and urgent. There is also a considerable demand for Grade 2 men of the new military ages, and for Grade 3 of the former military ages, except men who have been found by the medical boards to be fit only for sedentary work and who are without technical skill of a kind required in the Services.

LONDON HOSPITAL MEDICAL COLLEGE.—The following awards have been made to students of the London Hospital Medical College during the session 1917–18:—

Medical prize, £20, S. N. Sennett; honorary certificates: E. Miller and A. B. K. Watkins; Obstetric prize, £20, J. C. Ryder Richardson; honorary certificate: J. Fanning; Andrew Clark prize in Clinical Medicine and Pathology, £26, A. B. K. Watkins; honorary certificates: S. N. Sennett and E. Miller; Sutton prize, £20, A. B. K. Watkins; Anderson prizes in Elementary Clinical Medicine, £3, M. C. Hartley and R. A. Madgwick; honorary certificates: A. R. Crane and J. J. Coghlan; prizes in Elementary Clinical Surgery, £5, E. L. Sergeant, M. Marcus, M. C. Hartley, and F. F. Langridge and C. W. Tomkinson (equal—prize divided); Letheby prize in Organic Chemistry, £10, S. Sandler.

DONATIONS AND BEQUESTS.—By will the late Miss Ada Katharine Agnes Bickersteth, of Hunton Bridge, Herts, left, among other bequests, £500 each to the Middlesex Hospital for the Cancer Wards, the Home at Stoneygate-road, Leicester, Leicester Royal Infirmary, Watford District Hospital, and the Meath Home for Epileptics.

Obituary.

HENRY GEORGE PLIMMER, M.R.C.S. ENG., F.R.S.,

PROFESSOR OF COMPARATIVE PATHOLOGY AT THE IMPERIAL COLLEGE OF SCIENCE.

Professor Plimmer, whose death we chronicled at the time of its occurrence, was an exceedingly interesting figure in the medical world, and responsible therein for much good and varied work. The following detailed account of his career has been compiled from intimate sources.

Henry George Plimmer, the only son of Dr. George Plimmer and Eliza Eyres, was born on Jan. 29th, 1857, in Melksham, Wilts. His father died whilst he was a boy, and young Plimmer, after leaving school in 1870, became a clerk. Not being satisfied with such an outlook on life, he wrote in 1877 to Dr. J. H. Galton, who had been his father's assistant, concerning a career in medicine, and Dr. Galton invited him to come to him as assistant—the unqualified assistant's post being at that time a recognised mode of entering the medical profession. He lived with Dr. Galton at Norwood, at first doing the dispensing and book-keeping, but gradually helping in the dispensary part of the large practice of Galton and his partner Sidney Turner. In a few months he passed the preliminary examination of the College of Surgeons and Apothecaries' Society, and entered Guy's Hospital as a perpetual student in October, 1878. He was made prosector of the Royal College of Surgeons in 1882, became L.S.A. in October of the same year, and M.R.C.S. in January, 1883. Many of his dissections are to be seen in the Museum of the College of Surgeons, but he could not proceed to the Fellowship examination owing to the exacting work of a large general practice. In 1885 he was made a partner, but retired from general practice seven years later so as to devote himself to bacteriology and research, which he began with Professor E. M. Crookshank at King's College, London. Microscopy and histology greatly interested him in his student days; the first society of which he became a member was the Royal Microscopical in 1883. His early microscopical preparations were deservedly admired, and much attention was attracted by the inclusions in cancer cells, subsequently called Plimmer's bodies, which were differentiated by him in October, 1892, from the then known degenerations by means of a technique which he had devised. About this time he met Armand Ruffer, who was working at the same subject, and at Ruffer's suggestion they worked together at the laboratories of the Royal College of Surgeons. He was associated with Ruffer until illness compelled Ruffer to resign from the British Institute of Preventive Medicine, whither they had gone on its establishment in 1893. Some of the early work on diphtheria in this country was carried out by them there.

From this time on Plimmer occupied a series of important posts. He became pathologist to the Cancer Hospital in 1894, bacteriologist and lecturer on bacteriology at St. Mary's Hospital in 1896, and succeeded Silcock there as pathologist and lecturer on pathology in 1899, resigning this post to take charge of the cancer laboratories at the Lister Institute, started by Lord Iveagh, in 1902. Since 1898 he had been working at trypanosomes, partly in association with Sir J. Rose Bradford, and in 1906 undertook the research work on trypanosomiasis which was organised and directed by the Tropical Diseases Committee of the Royal Society. At the same time he was made a member of that committee. From 1907 to 1917 he was pathologist to the Zoological Society. His contributions to science were at last recognised in 1910, when he was elected a Fellow of the Royal Society. He accepted the professorship of comparative pathology at the Imperial College of Science and Technology in 1915, was elected a member of the War Office Tetanus Committee in 1916 and later of the Trench Fever Committee. He was actively engaged with the work of his professorship and the work of the War Office committees until a few weeks before his death, being very largely concerned with the recent discoveries relating to trench fever. In addition to these varied appointments Plimmer was a Fellow of many scientific and medical societies. He presided over the Royal Microscopical in 1911–12; he was visitor of the Royal Institution in 1914–16; a member of council of the Linnean and of the Association of Economic Biologists in 1917–18.

Plimmer's adaptability is worthy of special note. During his partnership with Turner and Galton he did surgical work of an original nature. Two cases—one of hysterectomy, the other of ectopic gestation—described in THE LANCET of 1888 were the first of their kind in this country. A paper on quinsy and rheumatism appeared in the *British Medical Journal* of 1886. His work on cancer dates from 1892. Following the note on the Parasitic Protozoa lately Found in Cancer, he further studied at the Cancer Hospital the various cell inclusions and during his appointment at St. Mary's Hospital he isolated a yeast from an ulcerating cancer. These yeast cells were very like cell inclusions, and the fact that they caused tumours in animals led to the hope that here was the long-looked-for cause of cancer. It was a disappointment, for though they were found in several cancers, they did not produce genuine cancer in animals, and were, no doubt, accidental infections. Comprehensive reviews on cancer from his pen were: On the Microscopical Diagnosis of Benign and Malignant Growths of the Cervix Uteri (*British Gynæcological Journal*, 1895); Ætiology and Histology of Cancer (*Practitioner*, 1899); the Parasitic Theory of Cancer (*British Medical Journal*, 1903). Since 1899 he worked mainly upon blood parasites, particularly the trypanosomes found in the tsetse fly disease, Gambia fever, sleeping sickness, describing three new species of the genus Toxoplasma.

Plimmer had a special gift for music. It was his recreation through life, and he was himself a remarkable pianist. He was also a connoisseur of the Italian School of Painting, while literature also occupied much of his time, although his scholarship is only dimly seen in his published works, such as "Omariana," "Bedullus Immortalis," and various presidential addresses. He delighted in intercourse with his fellow men, showing his kind and sympathetic nature to all, and was a brilliant conversationalist. The Omar Khayyam Club, of which he was some time president, afforded him abundant opportunities of meeting his friends, and he was one of those mainly concerned in founding the Lucretian Club, of which he was secretary for a number of years. Plimmer's life was full of many interests, and he found room for them all.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

To be temporary Surgeons: A. W. Cocking, D. A. Knight, N. Macleod, J. D. Byrd.

ROYAL NAVAL VOLUNTEER RESERVE.

Surgeon Probationer J. W. Scharff has been invalided with a pension and the retention of his rank after two years' service.

ARMY MEDICAL SERVICE.

Temp. Col. Sir Robert Jones (Major, R.A.M.C., T.F.) to be temporary Major-General.

Temp. Lieut.-Col. John M. Cowan (Major, R.A.M.C., T.F.) to be temporary Colonel.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. J. W. H. Houghton relinquishes the temporary rank of Colonel on re-posting.

Major S. B. Smith retains the acting rank of Lieutenant-Colonel whilst employed as Assistant Director of Medical Services of an Army.

Capt. J. W. C. Stubbs to be acting Lieutenant-Colonel whilst in command of a Medical Unit.

J. V. G. B. Tighe to be temporary Lieutenant-Colonel whilst serving at Gateshead War Hospital, Stannington.

Lieut.-Col. C. Garner, retired pay, to be acting Colonel whilst specially employed.

Capts. W. H. S. Burney and T. B. Nicholls and Temp. Capt. H. Moore relinquish the acting rank of Lieutenant-Colonel, and revert to the acting rank of Major, with pay and allowances of their substantive rank.

Temp. Major J. M. Nettleton, Canadian A.M.C., to be temporary Lieutenant-Colonel.

Temp. Capt. A. R. Jordon relinquishes the acting rank of Major on re-posting.

To be acting Majors: Temp. Majors H. F. Woolfenden, W. S. Dickie, R. Dick; Capts. G. F. Allison, C. Scales, W. H. Marshall, A. P. O'Connor, P. T. Priestley; Temp. Capts. E. B. Sunderland, W. De M. Peyton, T. Bragg, W. H. Fleetwood, D. C. Taylor, B. F. C. Dowding, J. A. C. Roy, C. Mackenzie, J. G. Duncanson, H. Stokes, E. L. Mackenzie, J. H. Legge, L. H. C. Birkbeck; Lieut. (temp. Capt.) J. La F. Lauder.

J. C. Webb to be temporary Major.

Capt. T. D. Inch, from R.A.M.C., Spec. Res., to be Captain.

The undermentioned temporary Lieutenants to be temporary Captains: G. S. Robinson, H. Topham, F. Heatherley, A. Barrett, A. T. Moon, J. W. O'Farrell, A. C. Brown.

To be temporary Captains: Capts. R. W. B. Gibson (South African M.C.) and T. L. Harrison (Canadian A.M.C.), T. H. Twigg, T. Milling, W. G. Ridgway, P. W. Jones, J. E. R. Orchard, H. E. C. Fox (late Surgeon, R.N.), D. T. H. Croly, E. Maynard, W. A. Russell, T. J. Buckley, S. P. Snook.

Temp. Hon. Lieut. H. F. Bold-Williams to be temporary Honorary Captain whilst serving with No. 8 Red Cross (Baltic and Corn Exchange) Hospital.

Temp. Hon. Lieuts. P. D. Spohn and E. A. Cayo to be temporary Honorary Captains.

P. M. Turnbull, late temporary Captain, is granted the honorary rank of Captain.

To be temporary Lieutenants: L. H. McConnell, A. L. Lynch, N. F. Sinclair, D. D. Farquharson, R. M. Mainwaring-White, A. W. MacK. Sutherland, A. Prentice, B. W. Lacey, J. Devine, F. H. Nixey, O. Eccles, A. S. Ransome, E. D. D. Davis, B. A. McSwiney, A. H. Ward, J. Moore, A. H. Marsh, G. Ap Thomas, R. A. MacArthur, W. Daunt, C. K. T. Hewson, P. N. Twomey, N. C. Fischer, N. J. Newbould, W. H. W. Mewhirter, W. B. Thompson, A. V. Moberly, H. G. Browning, G. S. Robinson, F. C. Mann, F. P. Hearder, C. H. Steinbach, A. W. Hare, F. W. Daniels, S. B. Turner, D. Davie, M. Baronov.

Officers relinquishing their commissions: Temp. Capts. E. L. Massiah, G. H. Brown (granted honorary rank of Captain), J. Lindsay, T. D. McLaren, F. M. Walker, A. Weigall, E. G. H. Weir, H. Saunders and R. McI. Muir (granted honorary rank of Captain), W. Rogerson, M. Hooper and J. M. Johnston (on account of ill-health contracted on active service and are granted the honorary rank of Captain). A. L. George; Temp. Lieuts. H. V. Mitchell, W. Martin, W. M. Fergusson (on account of ill-health).

SPECIAL RESERVE OF OFFICERS.

Capt. I. D. Evans relinquishes the acting rank of Major on re-posting.

Captains to be acting Majors: T. Lindsay, J. B. Scott, W. W. Shorten.

Lieutenants to be Captains: J. Scott, J. Adams, J. C. C. Howe, A. B. MacDougall, P. A. Stewart, O. M. Mirvlees, W. L. Agnew.

Capt. P. W. Mathew to be acting Major while specially employed.

J. C. Coutts, from St. Andrews University O.T.C., to be Lieutenant.

TERRITORIAL FORCE.

Capt. Charles L. Tireman relinquishes his commission.

Captains to be acting Majors whilst specially employed: J. M. Smith, T. J. T. McHattie, A. Radford, Lieut.-Col. J. Clay, L. M. V. Mitchell, G. G. Middleton, G. B. Buchanan, W. T. Torrance, J. Browne, P. S. Martin, D. W. Reese, J. J. E. Biggs, J. H. Robinson, C. S. Wink, F. Ward, E. B. Hinde, M. Morris, L. Milton, C. E. Petley, A. B. P. Smith, W. F. Mackenzie, R. S. Taylor, C. S. P. Black, J. A. H. Aitken, R. G. Walker, C. H. K. Smith, A. F. B. Shaw, C. W. C. Myles, F. A. W. Drinkwater, W. J. Richards, C. Kerr, D. Lamb, J. Blackwood, J. J. Rainforth, A. P. Watson, W. Dyson, M. U. Wilson, W. T. Gardiner, L. West, A. L. S. Tuke, W. T. Ritchie, J. G. Morgan.

Captains (acting Majors) relinquishing the acting rank of Major on ceasing to be specially employed: A. F. B. Shaw, J. G. Morgan, A. J. Drew (seconded for duty overseas).

Capt. (acting Major) R. S. Taylor, Capt. (acting Lieut.-Col.) D. Shannon, Capt. (acting Major) A. N. S. Carmichael, and Capt. (acting Major) G. L. K. Pringle relinquish their acting rank on ceasing to be specially employed.

Capt. (acting Major) W. L. Robertson to be acting Lieutenant-Colonel whilst commanding a Field Ambulance.

Capt. (Brevet Major) J. Ewing to be acting Major whilst specially employed.

Capt. H. L. Driver is seconded for duty with London District.

Capt. (acting Lieut.-Col.) J. M. Hunt relinquishes his acting rank on ceasing to command a General Hospital.

Capt. H. Buck is seconded for duty with a General Hospital.

Lieut. (temp. Capt.) A. Leitch, and Lieuts. G. Bryce and W. V. Barritt to be Captains.

Lieuts. A. G. Harrington, J. Dall, G. N. F. Reddan, T. H. Savory, D. Smith, and A. Sykes are seconded for duty with the R.E.

TERRITORIAL FORCE RESERVE.

Capt. G. L. K. Pringle, from R.A.M.C., to be Captain.

ROYAL AIR FORCE: *Medical Branch.*

L. S. Hooper (temp. Capt., R.A.M.C.) is granted a temporary commission as Captain, and to be temporary Major whilst specially employed.

R. G. Maglione, I. M. Thomson, and A. H. Todd are granted temporary commissions as Captains.

G. Dunderdale, J. P. Hennessy, G. W. Harbottle, F. Gill, J. S. Harbinson, J. J. O'Mullane, M. J. Whelton, and A. G. Graham are granted temporary commissions as Lieutenants.

INDIAN MEDICAL SERVICE.

The King has approved the admission of the undermentioned:—To be Lieutenants: Hira Singh Anand, Sunda Dass Sondhi. To be temporary Major: Percy Charles Woollatt. To be temporary Lieutenants: Nariman Sorabji Kotwal, Kaikhusroo Rustomji Dalal, Susanta Kumar Sen, Kantilal Kalyanji Mankodi, Gopal Narayan Khanna, Amar Nath Madbok, Bantwal Shankar Rau, Waris Khan, Eustace Trevor Neave Taylor, Keki Sorabji Bhiwandiwalla, Keith Montague Woodruff, Dya Ram Thapar, Albert Victor Lopes, James Henry Barrett, Shaikh Ghulam Mohamed, George Patrick de Sibra, Jugal Kishor Adhya, Yedatore Venkoba Krishnamoorthy.

URBAN VITAL STATISTICS.

(Week ended July 13th, 1918.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality, which had increased from 11·4 to 19·0 per 1000 in the four preceding weeks, further rose to 21·1, the highest rate recorded in any week of the current year. In London, with a population slightly exceeding 4,000,000 persons, the death-rate was 18·4, or 1·1 per 1000 above that recorded in the previous week; among the remaining towns the rates ranged from 6·2 in Ilford, 7·0 in Hornsey, and 7·1 in Bath, to 40·2 in Barnsley, 40·3 in Wakefield, 46·0 in Sunderland, 46·9 in Rochdale, and 49·4 in Middlesbrough. The principal epidemic diseases caused 330 deaths, which corresponded to an annual rate of 1·0 per 1000, and included 144 from whooping-cough, 84 from measles, 46 from diphtheria, 35 from infantile diarrhœa, 18 from scarlet fever, and 3 from enteric fever. Whooping-cough caused a death-rate of 1·5 in Warrington and in Sunderland, 1·6 in Ealing, 1·8 in Gateshead, and 2·4 in Walsall; measles of 1·5 in Sunderland, 1·6 in Rotherham, and 2·2 in Wakefield; and scarlet fever of 1·7 in St. Helens. The 821 cases of scarlet fever and 1070 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were 9 and 76 below the respective numbers remaining at the end of the previous week. The 1422 deaths from all causes in London included 287 from influenza, of which 168 were of persons aged 15 to 35 years. The causes of 61 deaths in the 96 towns were uncertified, of which 13 were registered in Birmingham, 5 in Manchester, and 4 each in Liverpool and Gateshead.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was 15·0, against 11·5 and 13·9 per 1000 in the two preceding weeks. The 260 deaths in Glasgow corresponded to an annual rate of 12·2 per 1000, and included 11 from measles, 6 from whooping-cough, 3 from infantile diarrhœa, and 1 each from enteric fever and diphtheria. The 115 deaths in Edinburgh were equal to a rate of 18·0 per 1000, and included 2 from diphtheria and 1 from whooping-cough.

Irish Towns.—The 250 deaths in Dublin corresponded to an annual rate of 32·7, or 9·4 per 1000 above that recorded in the previous week, and included 2 from whooping-cough and a fatal case each of measles, scarlet fever, and infantile diarrhœa. The 23 deaths in Belfast were equal to a rate of 28·3 per 1000, and included 10 from whooping-cough, 4 from infantile diarrhœa, and 1 from measles.

(Week ended July 20th, 1918.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality was 18·0, against rates increasing from 11·4 to 21·1 per 1000 in the five preceding weeks. In London, with a population slightly exceeding 4,000,000 persons, the death-rate was 15·2, or 3·2 per 1000 below that recorded in the previous week; among the remaining towns the rates ranged from 6·4 in Ipswich, 7·6 in Edmonton, and 8·9 in Hornsey, to 32·8 in West Hartlepool, 34·2 in Warrington, and 43·5 in Barnsley. The principal epidemic diseases caused 301 deaths, which corresponded to an annual rate of 0·9 per 1000, and included 105 from whooping-cough, 103 from measles, 41 from infantile diarrhœa, 31 from diphtheria, 14 from scarlet fever, and 7 from enteric fever. Whooping-cough caused a death-rate of 1·8 in Walsall, 2·0 in Aberdare, 2·3 in Grimsby, and 4·6 in Warrington; and measles of 2·0 in Barrow-in-Furness, 2·4 in Walsall, 2·6 in Sunderland, and 4·4 in Lincoln. The 836 cases of scarlet fever and 1016 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were 15 above and 54 below the respective numbers remaining at the end of the previous week. The 1171 deaths from all causes in London included 192 from influenza, of which 74 were of persons aged 15–35 years. The causes of 44 deaths in the 96 towns were uncertified, and included 6 in Birmingham, and 5 each in Liverpool, Manchester, and Gateshead.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality, which had increased from 11·5 to 15·0 per 1000 in the three preceding weeks, further rose to 17·4 per 1000. The 340 deaths in Glasgow corresponded to an annual rate of 15·9 per 1000, and included 9 from whooping-cough, 8 from infantile diarrhœa, 7 from measles, 4 from diphtheria, and 3 from enteric fever. The 106 deaths in Edinburgh were equal to an annual rate of 16·6 per 1000, and included a fatal case each of diphtheria and whooping-cough.

Irish Towns.—The 208 deaths in Dublin corresponded to an annual rate of 27·2, or 5·5 per 1000 below that recorded in the previous week, and included 5 from whooping-cough, 2 from infantile diarrhœa, and 1 from diphtheria. The 152 deaths in Belfast were equal to a rate of 20·2 per 1000, and included 4 from whooping-cough, 3 from infantile diarrhœa, and 1 each from enteric fever and diphtheria.

BOOKS, ETC., RECEIVED.

BAILLIÈRE, TINDALL, AND COX, London.

Surgical Therapeutics and Operative Technique. By E. Doyen. English edition prepared by the Author in collaboration with H. Spencer-Browne, M.B. Vol. II., Research Surgery (continued), Operations on the Head (continued), Thorax, Upper and Lower Limbs (complete in 3 vols.). 25*s.*

Aids to Analysis of Food and Drugs. By C. G. Moor, F.I.C., and Wm. Partridge, F.I.C. 4th ed. 4*s.*

Chemistry for Beginners. By C. T. Kingzett, F.I.C. 3rd ed. (New Part). 2*s.* 6*d.* net.

CHURCHILL, J. AND A., London.

War Surgery of the Abdomen. By C. Wallace, F.R.C.S. 10*s.* 6*d.*

Massage and Medical Gymnastics. By Dr. E. A. G. Kleen and Others. Translated by Dr. Mina L. Dobbie, with Foreword by Major R. C. Elmslie, R.A.M.C. 21*s.* net.

GRIFFIN, CHARLES, AND CO., London.

Food and Dietaries. By Sir R. W. Burnet, K.C.V.O., M.D. 5th ed. 4*s.*

Simple Experimental Hygiene, Physiology, and Infant Management for the Use of School Teachers. By K. M. Curwen. 6*s.* net.

HEINEMANN, WILLIAM, London.

The Breast: Its Anomalies, its Diseases and their Treatment. By J. B. Deaver, M.D., and Others. £2.

An International System of Ophthalmic Practice. Edited by W. L. Pyle, M.D. Medical Ophthamology. By A. Knapp, M.D. 21*s.*

Diseases of Occupation and Vocational Hygiene. Edited by G. M. Kober, M.D., and W. C. Hanson, M.D. 32*s.*

LONGMANS, GREEN, AND CO., London.

Anatomy, Descriptive and Applied. By H. Grey. 20th ed. Edited by R. Howden, C.M. 37*s.* 6*d.*

Stoichiometry. By S. Young, D.Sc. 2nd ed. 12*s.* 6*d.*

Practical Organic and Bio-Chemistry. By R. H. A. Plimmer, Reader in Physiological Chemistry, University of London. 18*s.*

POST-GRADUATE COLLEGE, WEST LONDON HOSPITAL.—During next week clinics will be held at 2 P.M. on Wednesday, Friday, and Saturday, and also at 10 A.M.

Medical News.

UNIVERSITY OF LONDON.—At examinations for internal and external students held recently the following candidates were successful:—

M.D. EXAMINATION.

Branch I., Medicine.—Arthur Joseph Eagleton, B.S., Guy's Hospital; Innes Hope Pearse, B.S., London School of Medicine for Women; William Norman Pickles, B.S., University of Leeds; and Gabriel Francis Rodrigues, B.S., University College Hospital.

Branch VI., Tropical Medicine.—Robert Yelverton Stones, B.S., London Hospital.

N.B.—This list, published for the convenience of candidates, is issued subject to its approval by the Senate.

UNIVERSITY OF GLASGOW.—The following candidates received their degrees on July 20th:—

Bachelors of Medicine and Bachelors of Surgery (M.B., Ch.B.).—With honours: John Gordon Harrower and William Ralston Duncan Hamilton. *With commendation:* Morris Hyman and Margharita Mary Lamont Couper. *Ordinary degrees:* Carl Otto Anderson, Ellen Davidson Anderson, John David Arthur, William Barras, Donald Cameron Bowie, William George Burns, Michael John Cahalane, Hugh Auld Cochrane, Edward Mitchell Erskine Cumming, John Freeland Cunningham, Andrew Murdoch Davidson, Archibald Browning Smith Drysdale, William Elgar, Duncan Finlayson, Grace Anderson Fleming, George Gordon, Adam Smith Goudie, Jane Evelyn Hanson, Lillias Beverley Hardie, Andrew Henderson, John Irving, Robert Paterson Jack, James Campbell Laurie, Jacob Lipsey, Alan James Macartney, Duncan MacColl, Isabella Quarrier McFadzean, Thomas McGowan, John William Mackay, Andrew Aird McLaughland, Donald Maclean, William Riddock McLinden, Findlay Kerr Macmillan, John Muil Melvin, Florence Frances Mitchell Milne, William Napier, Bryce Frood Niblock, Elizabeth Park Young Paterson, Norman Bligh Peacock, Robert James Peters, John Browning Potter, Rahmat Ullah Qureshi, William Scotland, Katherine Scott, Margaret Marion Catherine Steedman, James Alexander Walls, Thomas McSkimming Wilson, and George Macfeat Wishart.

ROYAL MEDICAL BENEVOLENT FUND.—At the last meeting of the committee, held on July 9th, 26 cases were considered and £244 12*s.* voted to 24 of the applicants. The following is a summary of some of the cases relieved:—

Daughter, aged 60, of L.S.A. Lond. who practised at Warwick and died in 1899. Only permanent income £26. Receives a little from occasional boarders. Rent and rates £24. Suffering at present from a nervous breakdown. Voted £12 in 12 instalments.—Daughter, aged 63, of M.R.C.S. Eng. who practised at Brixton and died in 1878. Was left totally unprovided for, and now, through advancing years, unable to work. Lives with a widowed sister, who cannot afford to keep her. Voted £12 in 12 instalments.—Widow, aged 48, of M.B. Edin. who practised at Ballindalloch and died in 1910. Was left without income with four children, now ages 11-19. Receives £21 per annum from other funds. Recently had a situation, but has been compelled to give it up with a view of looking after the younger children. Relieved six times, £60. Voted £10 in two instalments.—Widow, aged 62, of L.R.C.P. & S. Edin. who practised at Balham and died in 1913. Was left entirely without means, and health not sufficiently good to enable her to do regular work. Lives rent free, but will shortly have to look for a room, for which she will have to pay. Relieved five times, £30. Voted £12 in 12 instalments.—Daughter, aged 63, of L.F.P.S. Glasg. who practised at Mauchline and died in 1883. Has been in bad health for a long time. Only income £15 from another charity and the amount given by the Fund. Relieved 11 times, £166. Voted £12 in 12 instalments.—Daughter, aged 66, of M.R.C.S. Eng. who practised in Liverpool and died in 1883. For some years acted as matron of a home, but owing to rheumatism and deafness had to give it up. Total income £37. Lives with a sister, who shares the rent. Relieved four times, £46. Voted £12 in 12 instalments.—Daughter, aged 61, of M.R.C.S. Eng. who practised at Lacock and died in 1898. Largely dependent on dividends, which she and her two sisters receive from investments, but owing to the war these have greatly depreciated. Takes occasional boarders. Relieved three times, £30. Voted £10 in two instalments.—Daughter, aged 66, of M.R.C.S. Eng. who practised at Dorchester and died in 1892. At present is living in Paris with a widowed sister, but is anxious to get away from there on account of air raids. Only income £10 a year from her brother. Relieved once, £10. Voted £15.—Wife, aged 52, deserted by husband, an M.R.C.S. Eng. who practised at Bournemouth. Was left with one daughter, now aged 24, who is earning 27*s.* a week. Applicant's health is bad, which prevents her from working. Relieved five times, £50. Voted £12 in 12 instalments.—Widow, aged 69, of M.D. Glasg. who practised at Dennistoun and died in 1876. Applicant lives with a married daughter and is a permanent invalid. Daughter unable to keep her. Only income £12 from another charity. Relieved four times, £48. Voted £12 in 12 instalments.—Widow, aged 53, of L.R.C.P. & S. Edin. who practised at New Quay and died in 1893. Was left with two young children, both of whom are now in the Navy and allow her 15*s.* a week. Applicant's health is bad, and she recently fractured her leg. Relieved 15 times, £149. Voted £12 in 12 instalments.—Daughter, aged 62, of M.R.C.P. Edin. who practised at Holloway and died in 1884. Through ill-health applicant is unable to work. Has a pension from another charity of £40 and pays 16*s.* a week for board and lodging. Relieved 14 times, £127. Voted £12 in 12 instalments.

Subscriptions may be sent to the acting hon. treasurer, Dr. Samuel West, at 11, Chandos-street, Cavendish-square, W.1.

Mr. Richard R. Cruise, C.V.O., has been appointed surgeon-oculist and Sir Harry Baldwin surgeon-dentist to the King.

Parliamentary Intelligence.

HOUSE OF COMMONS.

WEDNESDAY, JULY 17TH.

Naval Medical Service.

Major NEWMAN asked the Secretary to the Admiralty what response had been obtained to the recent Admiralty invitation to the temporary surgeons to join the permanent list of the Royal Navy.—Mr. MACNAMARA replied: The actual number of applicants to transfer from the temporary to the permanent list of the Royal Navy since the promulgation of the Order is 18, and of these 15 will probably be eligible.

Major NEWMAN asked whether the right honourable gentleman was aware of the dissatisfaction that prevailed among members of the permanent medical service owing to the fact that surgeons were now doing the duties formerly carried out by fleet- and staff-surgeons without extra pay or acting promotion as in other branches of the service, and that the large influx of temporary surgeons had not reduced the time served for promotion in the permanent service; was he aware that when similar conditions prevailed in the Royal Army Medical Corps all subaltern officers of the permanent list were promoted forthwith; and what did he propose to do to remedy these grievances.—Mr. MACNAMARA answered: The Admiralty is not aware of any dissatisfaction in this respect, nor has any previous representation on the subject been received. The whole question of pay, prospects, and other matters in connexion with the medical branch is now under the consideration of the Board of Admiralty. This particular question of acting rank will also be dealt with. The influx of temporary surgeons has no influence on the conditions of promotion in the permanent service. I note the reference to what occurs in the Royal Army Medical Corps, but the case of subaltern officers in that corps does not form a parallel, as the Royal Naval officers affected are of the relative rank of captain or above.

Medical Grading.

In the course of an answer to Mr. H. SAMUEL, Sir AUCKLAND GEDDES said: Formerly a certain number of men were placed in Grade III. in order to provide an opportunity for diagnosing the affection from which they were suffering. Under the instructions now current a man who is temporarily unfit for posting on account of some acute transient affection (e.g., measles or scarlet fever), or whose case requires some special test, is not graded, but is notified that he must again attend for the completion of his examination and grading upon a definite date at an appropriate interval of time. In all other cases men are now placed at once in the grade for which they are considered physically fit. Men who are found to be permanently and totally unfit for any form of military service are given a final discharge.

Mr. ALBION RICHARDSON asked whether in order to give to all men called up, irrespective of their financial position, the same chance of being correctly graded he was prepared to make arrangements, or to recommend that arrangements should be made by the appropriate Government department, to enable a man who had been attended by his panel doctor in recent illness and who could not afford to pay such doctor for a certificate stating his recent medical history, to obtain such a certificate free of charge for production to the medical board to assist them in grading him, in the light of his recent medical history so certified to.—Sir A. GEDDES replied: I fully appreciate the importance of the point raised in my honourable friend's question. At present the instructions are that in cases of doubt as to the man's medical history chairmen of medical boards are to consult the recruit's private medical attendant. The difficulty connected with this is that so many medical men are serving with the Forces that in a very large number of cases the man's ordinary medical attendant, quite irrespective of the man's financial position, cannot be referred to. It was largely to meet this difficulty, which was fully recognised last autumn, that the systems of re-examination by National Service Medical Boards, of specialist examination in connexion with these boards, and of appeal medical assessors were introduced.

Housing of the Working Classes.

Answering Sir S. ROBERTS, Mr. HAYES FISHER said: The total number of local authorities in England and Wales which have intimated to me that houses for the working classes are required in their areas is 1103. Owing to the form in which the replies of local authorities have been given it is not possible to state exactly how many houses they consider necessary, but the number probably exceeds 300,000. In 510 cases the number of houses required exceeds 100.

THURSDAY, JULY 18TH.

Medical Establishments in France.

Major CHAPPLE asked the Under Secretary for War whether the Army Council had now considered the report of the

Committee on Medical Establishments in France, and whether any action was to be taken in the matter.—Mr. MACPHERSON replied: Yes, sir, the report has been considered, and such action as was desirable has been taken.

Medical Officer Prisoners in Turkey.

Colonel BURN asked the Financial Secretary to the War Office whether British medical officers, both of the Royal Army Medical Corps and of the Indian Medical Service, who were prisoners in Turkey were receiving smaller pay and allowances than when they were on active service in Mesopotamia or elsewhere, although they were still working as doctors; whether he would arrange that they be given the full pay and allowances which they drew on active service on receipt of certificates from them, or on other evidence, that they had had medical charge of prisoners; and whether those of them who drew free rations while on active service would be given an allowance in lieu for the period covered by such certificates or evidence.—Mr. FORSTER answered: British officers, both of the Royal Army Medical Corps and of the Indian Medical Service, are on their release or exchange credited with the full Indian pay of their substantive appointment for any period of their captivity during which they certify that they were fully employed with the care of British or Indian sick or wounded. Ration allowance is only issuable to officers when they are on active service.

Treatment of Nerve Strain.

Sir A. GRIFFITH-BOSCAWEN (Parliamentary Secretary to the Ministry of Pensions), replying to Colonel YATE, said: For functional nerve disorders six homes of recovery have been established as follows: One in London for 120 patients; one in Leicester for 60; one near Manchester for 100; one in Edinburgh for 30-60; one in Dublin for 33; and one in Belfast for 62. All these have workshops or provide other forms of occupation, such as gardening. There is no connexion with lunacy administration or lunacy staff. The records of my department do not, unfortunately, enable me to state how many men have passed through their hands since they were opened. I should, perhaps, add that no special provision has been made for men suffering from uncertifiable mental deficiency who are not suitable for admission to one of the homes of recovery. The number of cases of this nature which have been brought to my notice is not large, and, where necessary, arrangements have been made with one or other of the existing mental homes which accept uncertifiable cases.

Medical Examination of School Children in Scotland.

Mr. MUNRO (Secretary for Scotland) informed Colonel G. COLLINS that schemes for the medical examination of school children had been adopted by the whole of the school boards in Scotland, and, except in the county of Shetland, had actually been brought into operation. In some districts, however, the work had been temporarily interrupted owing to depletion of the medical and nursing staffs through the urgent demands of the war.

Lanarkshire Housing Scheme.

Mr. DUNCAN MILLAR asked the Secretary for Scotland whether arrangements had now been completed with the Treasury for the carrying out of the Lanarkshire housing scheme which was adjusted some months ago.—Mr. MUNRO replied: The Treasury has agreed to the scheme subject to certain conditions which will be communicated to the local authorities concerned.

Appointments.

CARLILL, H., M.D. Cantab., M.R.C.P. Lond., has been appointed Assistant Physician to the Westminster Hospital.

KENNEDY, D., L.R.C.P. & S. Edin., L.F.P.S. Glasg., Certifying Surgeon under the Factory and Workshop Acts for the Newbury District of the county of Berks.

WACHER, H., M.B., B.C. Camb., one of the Medical Referees under the Workmen's Compensation Act, 1906, for County Court Circuit No. 49, Ashford, &c., County Courts.

WARD, G. E. S., M.D. Lond., Assistant Physician to the Middlesex Hospital.

Vacancies.

For further information refer to the advertisement columns.

Barnsley, Beckett Hospital.—Locum Female Surgeon.
Birmingham University.—Sen. Demonstrator of Anatomy. £250.
Bolingbroke Hospital, Wandsworth Common, S.W.—Res. M.O. £200.
Bristol General Hospital.—H.P. £175.
Bristol Royal Infirmary.—H.P. and H.S. £120.
Bristol University.—Demonstrator in Physiology.
Bury Infirmary.—Jun. H.S. £200.
Carlisle City, Maternity and Child Welfare.—Female Asst. M.O. £400.
Dudley, Guest Hospital.—Asst. H.S. £120.
Evelina Hospital for Children, Southwark, S.E.—H.P. and H.S. £160.
Great Yarmouth Hospital.—H.S. £200. Fifth-year Students. £150.
Guy's Hospital, S.E.—Two Clinical Assts. 1 guinea per session.
Hackney Union Infirmary, E.—Jun. Asst. M.O. £250.
Huddersfield County Borough.—Female Asst. M.O.H. £350.
London Temperance Hospital, N.W.—Surgical Registrar. 40 guineas.
Maidenhead, Home for Discharged Neurasthenic Sailors and Soldiers, Bray Court (National Hospital for the Paralysed and Epileptic, W.C.).—Res. M.O. £500.
Manchester City.—Female M.O. £450.
Manchester County Asylum, Prestwich.—L.T. £7 7s. per week.
Manchester Royal Eye Hospital.—Sen. H.S. £120.
Netley, British Red Cross Hospital.—M.O. for Electrical Department.
Nottingham, Ransom Sanatorium, Mansfield.—Res. M.O. £250.
Sheffield Royal Infirmary.—H.S. £120. Also H.P. £120.
South London Hospital for Women, S.W.—Female Temp. Asst. P.
Sunderland County Borough.—Asst. Female M.O.H. and Maternity and Child Welfare M.O. £400.
Walsall Education Committee.—L.T. Sch. Med. Insp. £400.
Walsall General Hospital.—Female H.S. and Anæs. £175.
Whipp's Cross War Hospital, Leytonstone, E.—Res. M.O. £1 per day.
Willesden Municipal Hospital, N.W.—Jun. Res. M.O. £300.

Births, Marriages, and Deaths.

BIRTHS.

HIGGINS.—On July 18th, at Straylea, New Milton, Hants, the wife of Captain F. B. Higgins, R.A.M.C., of a daughter.

HUGHES.—On July 18th, at "Coningsby," Stoke, near Rochester, to Dr. and Mrs. J. Morgan Hughes, a daughter (Joan).

SUCKLING.—On July 21st, at Charlton Lodge, Shepton Mallet, the wife of J. Jerome Suckling, M.B., B.S. Lond., of 5, Marine-terrace, Margate, of a daughter.

MARRIAGES.

CUNNINGTON—WEBB.—On July 20th, at St. Mary Abbott Church, Kensington, C. Willett Cunnington, M.B., Lieutenant, R.A.M.C. (temp.), of Tatchley House, Dollis Avenue, Church End, Finchley, N., to Phillis E. Webb, M.B., of 7, Scarsdale Villas, Kensington, W.

DRURY—TOMB.—On July 5th, at St. Gabriel's Church, Cricklewood, N.W., Major Kenneth Kirkpatrick Drury, M.C., R.A.M.C., to Meta Elizabeth, second daughter of William Tomb, Upperlands, co. Derry.

DYSON—GODDARD.—On July 13th, at the Parish Church, Wembley, Harold Edward Dyson, M.D. Lond., to Irene Eleanor, only daughter of Dr. and Mrs. C. E. Goddard, Harrowdene House, Wembley.

KINGSTON—VAUGHAN WALTON.—On July 15th, at Southsea, by special licence, Captain Stuart Hardy Kingston, R.A.M.C., to Mabelle Vaughan, third daughter of the late James Thomas Walton, of Bristol.

KYNGDON—DE LA COUR.—On July 11th, at St. Luke's, Oseney-crescent, N.W., Frederick Henry Kyngdon, M.D., of Lansdowne House, Tottenham, to Ethel Marian, elder daughter of G. F. de la Cour, M.D., and Mrs. de la Cour, of Camden-road, N.W.

MACAULAY—BRYSON.—On July 15th, at Dumfries, by the Rev. J. A. Campbell, Troqueer, Lieutenant Thomas Symington Macaulay, M.D., R.A.M.C., of Seremban, Federated Malay States, to Eleanor Minnie, daughter of Mr. Alexander Bryson, Castramont, Rotchell Park, Maxwelltown.

MUIR—LIVINGSTON.—On July 19th, at Inchbrook, Walkerton, Leslie, Major A. Ross Muir, R.A.M.C., T.F., to Ada Jane Buchan, daughter of James Livingston, Esq., J.P., Inchbrook, Walkerton, Leslie, Fife.

DEATHS.

ETTLES.—On July 19th, at his residence, 114A, Harley-street, London, W. 1, the result of a serious operation, William James McCulloch Ettles, M.D., F.R.C.S., in his 50th year.

STITT.—On July 17th, at Halifax, N.S., of blood poisoning, Robert R. Stitt, Medical Officer, S. S.——, second son of the late Colonel Samuel Stitt, of Birkenhead, and Mrs. Stitt, of Caldy, Cheshire, and loved husband of Eva Stitt, Port St. Mary, I.O.M., in his 51st year.

WEBB.—On July 16th, at Portballintrae, C. Walsham Webb, M.D.

WEDD.—On July 13th, killed in action, Captain Edward Parker Wallman Wedd, M.C., Yeomanry and R.A.M.C., aged 34.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

THE LANCET, VOL. I., 1918: THE INDEX.

THE Index and Title-page to the volume of THE LANCET completed with the issue of June 29th will be ready next week. Owing to the increasing shortage in the paper-supply, the Index will not be issued with all copies of THE LANCET, as was the custom prior to the War. Subscribers who bind up their numbers are requested to send a *post-card* (which is more convenient for filing purposes than a letter) to the Manager, THE LANCET Office, 423, Strand, London, W.C. 2, when a copy of the Index and Title-page will be supplied free of charge

EDITORIAL NOTICE.

In consequence of the pressure on our space and the shortage of paper, the Editor may be compelled to abbreviate communications, as an alternative to their rejection, when time does not allow them to be reconsidered by their authors.

Notes, Short Comments, and Answers to Correspondents.

SHOCK IN BURNS AND SCALDS.

"TAKE care of shock and Nature will do the rest" summarises the teaching of the lecture delivered at the College of Ambulance (3 Vere-street, London, W.) on July 11th by Dr. J. M. H. MacLeod, physician for diseases of the skin at Charing Cross Hospital. The lecture was the ninth of a series on ambulance work and first-aid intended for medical practitioners as well as ambulance workers. Sir James Cantlie, who presided, spoke of the growing importance of burns and scalds, on account of the improved methods of dealing with which the St. John Ambulance Handbook had been recently completely revised. The lecturer referred to the increased number of accidents in factories due to war conditions, to the action in the war area itself of liquid fire, mustard gas, and the like, and to the terrible burns resulting from aeroplane accidents and air raids at home. Experience had already taught much. He described the differences between the injuries caused by dry heat and moist heat. As a rule burns were less extensive and deeper than scalds and nearly twice as fatal. The immediate gravity in either case depended more upon the extent of the surface injured than the depth of the injury. When one-half or even one-third of the body surface was injured death was almost absolutely certain. An arm or a hand might be burned to the sixth degree—i.e., totally destroyed—and yet with proper care the patient would recover. The duration of exposure to the heat was also an important factor. Burns of the first degree generally healed in a few days, those of the second degree in which blisters had formed were more difficult to deal with on account of the liability of the contained fluid to become septic. Treatment should be taken seriously, however slight the injury might appear at first sight. In 24 hours a blister might form, and blisters were peculiarly liable to become septic. Given a wound or a burn of the same area the lecturer would prefer the wound to treat. In burns of a minor degree the first thing to do was to soothe by bathing in a solution of bicarbonate of soda in the proportion of a drachm to a pint of water. After pain had been relieved it was important to avoid friction and give rest. A dressing with a bland powder such as stearate of zinc might be used, and it was not necessary to exclude air. In a burn of the second degree it was best to puncture and drain the blister after washing with 1:4000 $HgCl_2$ unless it was possible to ensure asepticity. The dressing should soothe and astringe; he had found a weak solution of aluminium acetate preferable to other applications. Picric acid was liable to irritate. No redressing was required unless the wound became septic, a condition revealed by a characteristic smell. To be taken off the dressing must be soaked, or growing tissue might be torn off with it. Of all injuries burns were most liable to be accompanied by severe nervous symptoms: hysterical manifestations in the case of small burns and collapse in burns of a large area. The first consideration should be the patient, not the burn. Put him into a bath at 100° F., clothes and all; leave him there as long as necessary; give a normal saline injection if desirable, but on no account a stimulant. Then cut the clothes off and put the patient to bed, remembering that the skin was hypersensitive and a hot-water bottle therefore out of place. The bed should rather be warmed before putting the patient in. For severe burns treated in hospital no dressing was required, but the part should be protected by a cage warmed by an electric lamp and the charred surface dusted over with a bland powder. Moderate sepsis was best left alone; if severe the patient should be placed in the bath again until the surface became clean. Little scarring occurred by this method, but it was important to place the injured part in a natural position in case contraction of the tissues should occur. A review of Dr. MacLeod's recent book on "Burns and Their Treatment" appeared in our issue of July 20th.

MEDICINE IN SPANISH.

Two standard medical text-books of moderate size have been done into Spanish under the editorship of Dr. Luis Felipe Calderon, professor of clinical medicine at Bogotá, and issued by Messrs. Henry Frowde, and Hodder and Stoughton, as Publicaciones Médicas de Oxford. They are (1) "Manual de Medicina," by Dr. A. S. Woodwark (pp. 415, price 12*s.* 6*d.*); and (2) "Emergencias en la Practica de la Medicina y de la Cirugia," by Mr. Percy Sargent and Dr. Alfred E. Russell (pp. 496, price 17*s.* 6*d.*). Spanish America is largely dependent on foreign medical literature and we are glad that British text-books should be represented. The books may also suggest an agreeable way to the medical student of picking up a modicum of a Spanish medical vocabulary.

CHILD-WELFARE LITERATURE.

THE National Baby Week Council, 27A, Cavendish-square, London, W., have published a series of pamphlets which should prove useful to workers in the cause of infant and child life conservation. *Nation's Wealth* (price 6*d.*) is a collection of "messages" from medical men and women, clerics, social workers, and others, pointing out the importance of child welfare work and containing useful ideas for speakers and lecturers. A sentence in the foreword by Dr. Eric Pritchard puts the case in a nutshell: "In the last analysis," he says, "the causes of infant mortality are want of knowledge and want of character, two wrongs that it is within human power to redress." This message is further emphasised in *Danger Ahead, or the Difficulties of a Young Mother*, a play in three acts, while the subject is developed with particular reference to the dangers of syphilis in the *Factors of Infant Mortality*, a lecture by Dr. C. W. Saleeby. *Baby Week, its Objects and its Future*, by Miss Alice Elliott; *National Baby Week from the Working-Class Mother's Point of View*, by Mrs. H. B. Irving; and *Civic Responsibilities with Regard to Child Welfare*, by Dr. H. Scurfield, are other lectures which deserve to be widely distributed and read. With the exception of the first mentioned publication the price in each case is 4*d.*

DISINFECTION OF PUBLIC VEHICLES IN CALCUTTA.

AT a recent meeting of the Calcutta municipal council the attention of the health department was directed to the report of Major Glen Liston, I.M.S., on the danger of infection from vermin in public vehicles, such as railway carriages and tramcars, and to the method of fumigation with hydrocyanic acid gas to get rid of the parasites. The council agreed to discuss the practicability of disinfection by this means with the Calcutta Tramways Company.

MORE MOULTING.

BETWEEN the issues of June 7th and June 14th the cover of the valuable weekly Public Health Reports, issued by the U.S. Public Health Service at Washington, turned from green to grey.

Dr. A. J. Rice-Oxley has been appointed justice of the peace for the County of London.

F. W. P.'s communication would have gained in value if the clinic to which he alludes had been described in detail. If this can be done it would be well not to obscure the issues by reflections on those responsible for the National Insurance Act.

Dr. J. L. Roux-Berger sends us a reprint of his paper in the *Presse Médicale* for May 30th, in which he dwells on the danger of late and incomplete operation in gunshot wounds of the pleura and lung. To leave an infected fracture of the rib or a retained fragment of clothing or projectile is to ensure the permanence of infections menacing the pleura. Early operation on the lines first recommended by P. Duval would avoid the chronic infections of the pleura and the pulmonary fistulæ which he has found always difficult to treat and liable to fatal complication.

Communications, Letters, &c., to the Editor have been received from—

B.—Baby Week Council, Sec. of; Sir J. W. Byers, Belfast; Major A. S. G. Bell, R.A.M.C.

C.—Dr. R. Craik, Lond.; Mr. B. Cridland, Wolverhampton; Dr. E. L. Collis, Lond.; Major W. A. Chapple, R.A.M.C.; Dr. J. B. Christopherson, Khartoum; Mr. W. G. Cooper, Chester; Surg. G. F. Cobb, R.N.; Dr. A. S. Currie, Lond.

D.—Dr. B. Dunlop, Lond.

E.—Dr. G. Elliott, Toronto; Major R. Eager, R.A.M.C.

F.—Factories, Chief Inspector of, Lond.; Miss E. F. Ford, Lond; Capt. W. Fletcher, R.A.M.C.

G.—Dr. W. Gordon, Exeter; Dr. J. D. Grant, Lond.; Mr. J. Galsworthy, Lond.

H.—Messrs. J. L. Hatrick and Co., Lond.; Mr. J. N. Harris, Lond.; Major H. Hemsted, R.A.M.C.; Dr. C. M. Hough, Ambleside; Major A. F. Hurst, R.A.M.C.; Mr. C. A. Hill, Lond.

I.—Capt. A. C. Inman, R.A.M.C.

J.—Major-Gen. Sir Robert Jones, A.M.S.

K.—Dr. H. C. Kidd, Bromsgrove; Capt. E. B. Kitching, R.A.M.C.; Capt. E. B. Krumbhaar, M.R.C.; Messrs. P. S. King and Son, Lond.

L.—Staff-Surg. T. D. Luke, R.N.; London Hospital Medical College, Sec. of.

M.—Mr. C. Mayfield, Bristol; Sir J. W. Moore, Dublin; Dr. J. B. Mennell, Lond.; Mr. L. Morris, St. Albans; Mr. F. S. Miles, Hove; Mr. L. Mundy, Lond.; Dr. B. W. Martin, Leicester; Dr. J. A. Murray, Lond.; Dr. H. A. Macewen, Lond.; Mr. T. S. McCallum, Huddersfield; Messrs. Alex. Morison and Co., Edinburgh; Ministry of Food; Ministry of National Service.

N.—Mrs. G. Newham, Dublin; Dr. C. R. Niven, Liverpool; National Health Insurance, Joint Committee of.

P.—Dr. H. R. Phillips, Lond.; Poplar, Medical Officer of Health of; Dr. F. W. Pilkington, Kencott; Dr. E. B. Prest, Glenafton; Dr. C. A. Parker, Lond.

R.—Royal College of Surgeons, Edinburgh; Dr. H. S. Reynolds, Wisbech; Dr. W. B. Russell, Colwyn Bay; Royal Academy of Medicine in Ireland, Dublin; Dr. A. J. Rice-Oxley.

S.—Dr. J. W. Scharff, Tramore; Mrs. J. R. Speak, Halifax; Sir W. J. Smyly, Dublin.

T.—Major P. Turner, R.A.M.C.; Mr. A. Thornton, Marlborough; Dr. C. H. Thatcher, Edinburgh.

U.—University of London; University of Glasgow.

W.—Prof. G. S. Woodhead, Cambridge; Dr. T. Wakefield, Haslemere; Mrs. M. M. Wallace, Peebles; Dr. L. A. Weatherly, Bournemouth.